ENGINEERING NEWS-RECORD

JUNE 6, 1957

CONTINUED ON PAGE 17

▸ Mammoth fill job crosses Great Salt Lake p. 34

▸ Factions in conflict—over use of water p. 47

Port of New York—the big one gets bigger p. 66

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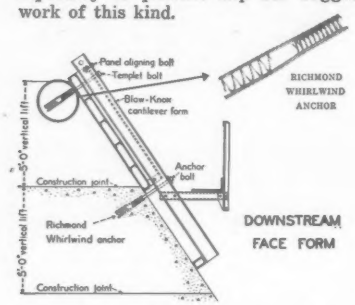
In dam construction like the above, considerable speed and economy are to be gained by pouring successive monoliths in 5 ft. lifts into steel cantilevered forms. Success of this money-saving method depends, however, on one-point form anchorage that will positively withstand massive overhead pours and loads imposed from all directions. Richmond's *Whirlwind* anchor was designed especially to prevent slip for rugged work of this kind.



These Richmond anchors are mounted on the form before each monolith is started. Installation is easy. The *Whirlwind* is made with double coils, one coil takes the form bolt, the other supplies added anchorage to prevent slip in concrete during its low early strength period. There is no spalling. Richmond's development of these special anchors has been in large part responsible for the constantly increasing popularity of this fast, more economical, anchorage and pouring method.

For more information, or a copy of the Richmond Handbook of tying devices, anchorages and accessories for concrete construction, write: RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Ave., Brooklyn 8, N. Y. or 315 S. 4th St., St. Joseph, Mo.

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EIGHTY-THIRD YEAR OF PUBLICATION

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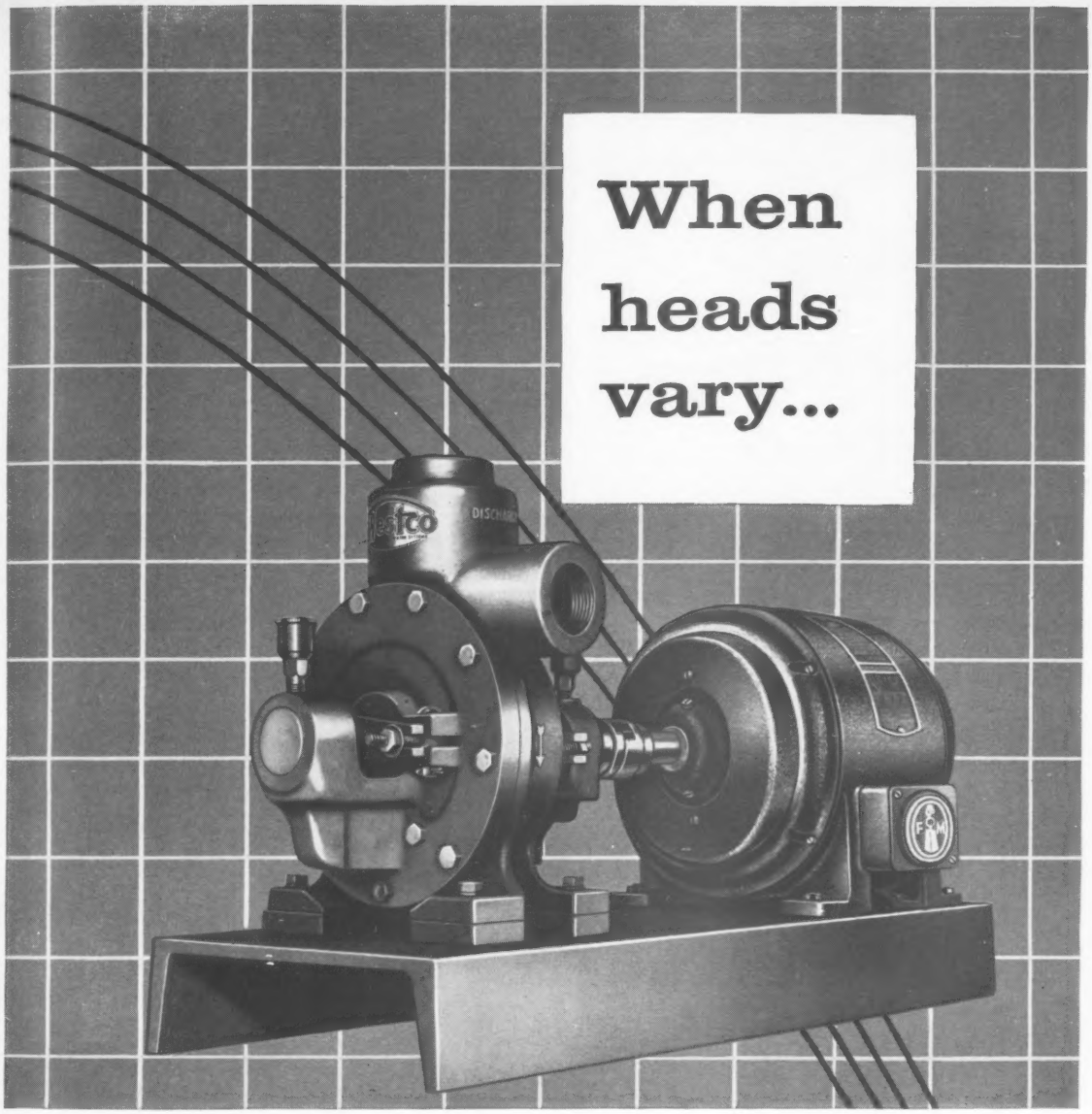

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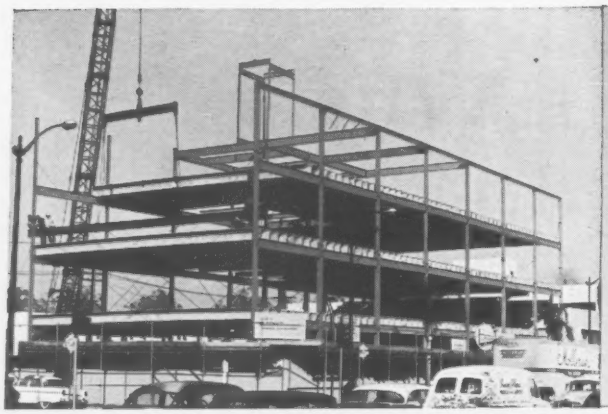
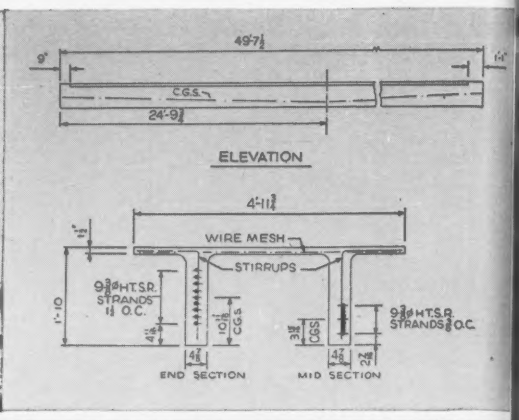
Prestressed concrete floor members with deflected strands were used in this Beverly Hills, California, 4-story office building. Steel plates cast in the concrete members were welded to the steel frame, so that the floor system serves as a diaphragm to stiffen the entire structure.

Each double-tee floor section is five feet wide x 22 in. deep and prestressed with 18 Roebling 3/8 in. diameter 7-wire uncoated stress-relieved prestressed concrete strands. A 2 in. poured-in-place slab on top of the precast section completes the structure. The 49-foot span is designed for 50 pounds per sq ft live load, plus 20 pounds per sq ft for walls and partitions.





Architects and Engineers
Cejay Parsons and Jack H. MacDonald

General Contractor
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Prestressed Concrete Double-Tee Floor Sections
fabricated by
Rockwin Prestressed Concrete Corporation
Norwalk, California

Deflected Strands Increase Scope of Precast Prestressed Concrete

New technique permits longer spans with shallower and lighter beams; opens new areas for application of modern construction medium

Recently developed methods have added new impetus to the rapidly increasing use of precast pretensioned bonded prestressed concrete.

One of the most important of these new developments is deflection of the strands. This substantially increases the strength and bending resistance of a member without increasing its size.

A typical example is the 49 ft 7½ in. span floor system in the building illustrated above, using double-tee beams only 22 in. deep. Units for this span and load would have had to be much deeper and heavier if the prestressed strands were not deflected.

For data on tensioning elements and general information on prestressed concrete, write Construction Materials Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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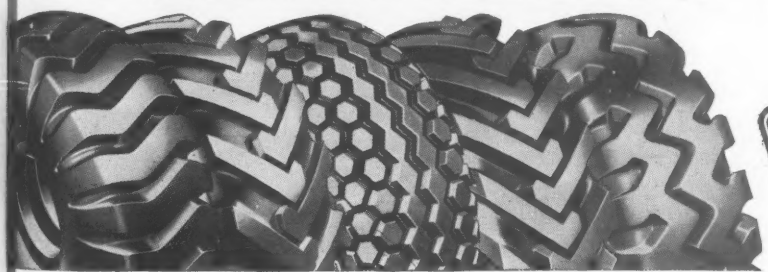

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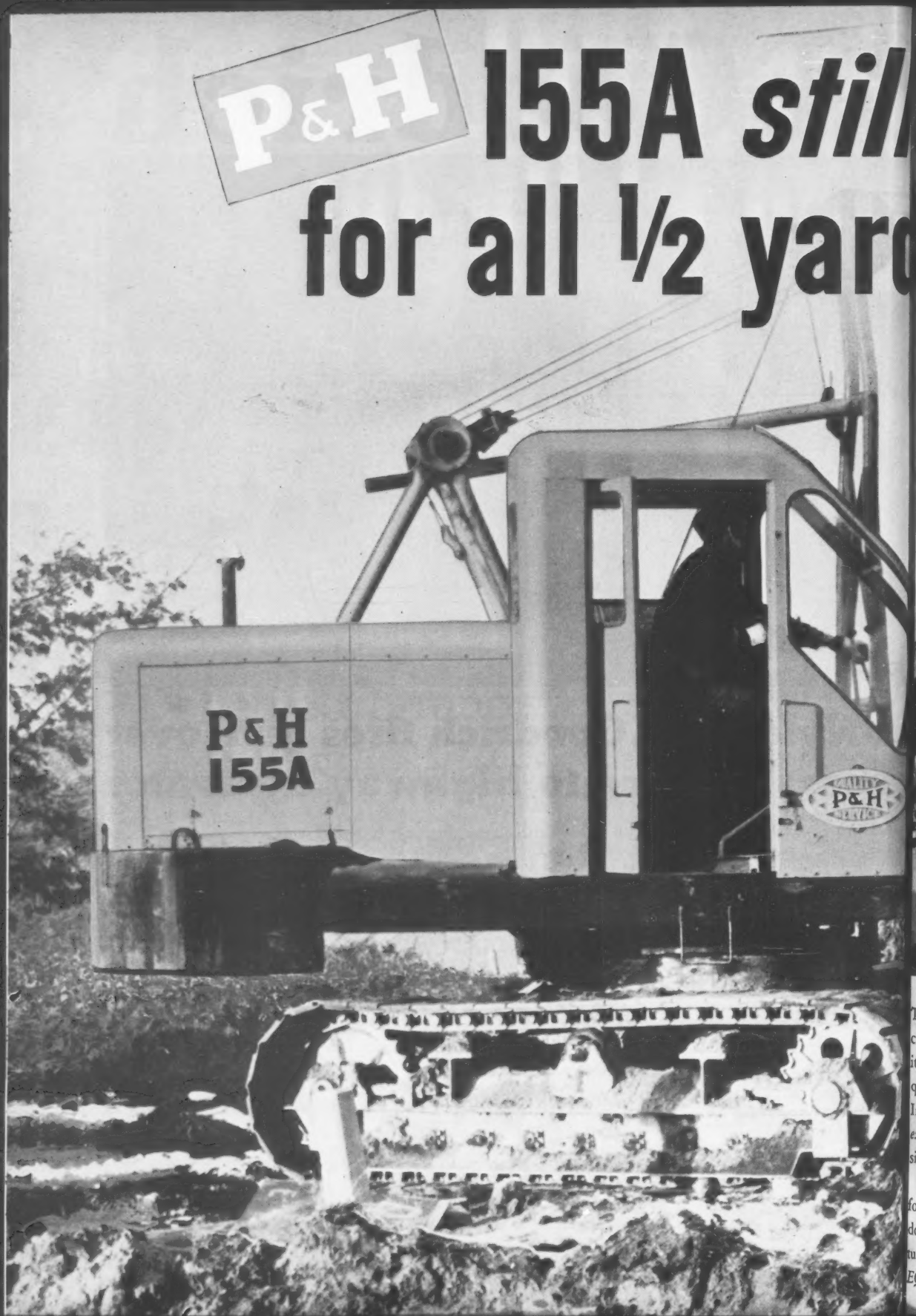
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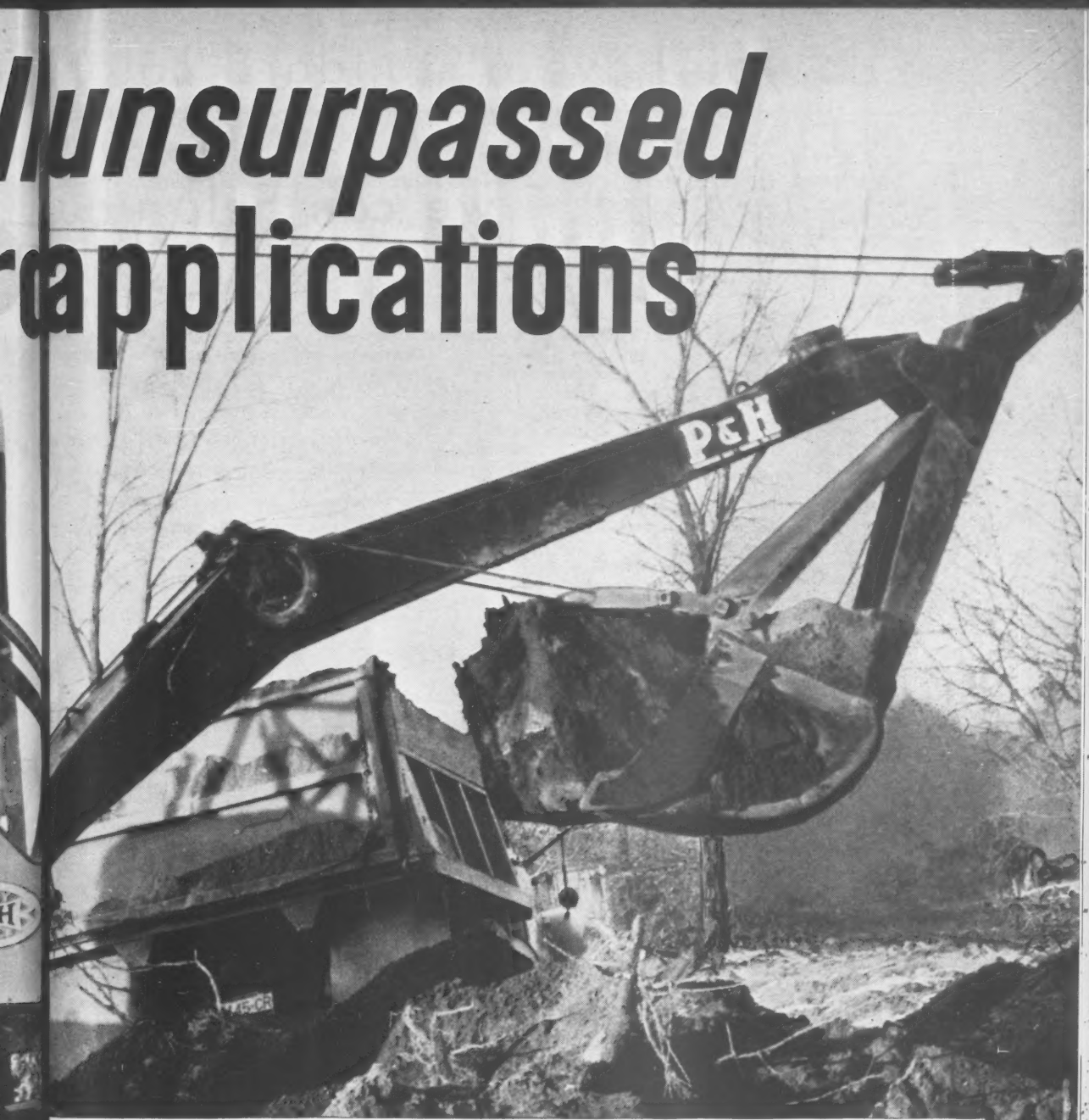

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Reader Comment

Frozen Personnel

SIR—I read with interest your article on the freezing of professional and technical personnel in the Bureau of Public Roads, the State Highway Departments, and the Engineering Departments of all our Counties and Cities (ENR April 25, p 25.)

It would be interesting to know how the Bureau expects to recruit new personnel, or how they expect the various other engineering agencies affected to attract intelligent young engineers when they require the states and the consultants on state highway work to enter into a contract prohibiting the consultants from hiring any engineers presently employed by the Bureau of Public Roads, any State Highway Department or any Engineering Department of a City or County.

The only result of such a clause will be to make it impossible for public agencies to attract new professional personnel.

HARRY R. POWELL
Harry R. Powell and Associates
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Seattle 4, Wash.

Wives Have Last Word

SIR—My husband and I were very interested in a recent letter titled "Wife Questions Salaries" (ENR April 18, p. 8), because we agree so entirely with the opinions expressed in it.

My husband is a young (28) civil engineer and I think our situation is typical of many engineers in many ways. If we compare our financial situation with that of our closest neighbors (two mechanics, two steelworkers and a railroad conductor) who are all about our age, we begin to feel sorry for ourselves. True, in time my husband expects to earn more than they do. However, with the financial headstart they have because they did not go to college, and also since we will probably send our children to college whereas they don't intend to, we do not expect to be any better off than our neighbors for at least 20 years. Inflation, too, makes the situation worse, as we must pay about $3,000 more for the same house they were able to buy six years ago.

After college, my husband went back to school and received his M.S. degree. The sad fact is that after two more years of study he must start out at a salary less than he would have been making by then, had he not gone back to school. At this point, it is very hard for me to see just how the hard work, sacrifice and dedication involved in getting an education ever really pay off for the average engineer.

Another thing that really makes me mad is that while the draftsmen he works with get paid time and a half for overtime, he does not, even though the better draftsmen and the young engineers earn fairly equal pay. The reason for this is mainly that an engineer is a "professional" man. The only advantage I have seen him receive because of "professional" status is the right to get pushed around.

If only part of the fantastic sums of money being spent today by the government and private firms in recruiting and readjusting new engineers were instead spent to improve the financial situation, working conditions and status of the engineers already employed, everyone would benefit, for them the high engineering turnover would decline, more young men would be attracted to the profession and the engineer shortage would solve itself.

•

SIR—The engineer's wife who wrote in your Apr. 18 issue is definitely not the only wife who has heard her husband say that his son will never be an engineer. My husband was never on anyone's dean's list, but he spent years of work both before and after World War II to earn a degree in civil engineering. Now, after ten years of experience he earns about $75 per month more than the greenest 1957 college graduate will command.

True, this is partly due to some "job-hopping" which had nothing to do with salary. But all of his jobs have been strictly in the engineering field, and by staying in engineering when the steps to sales or general contracting would have been so short and easy, he has sold himself short all these years.

Now he is going to try for something new. Instead of asking for the salary to which he feels he is entitled for the work he is asked to do, he will ask his company for work commensurate with his present salary. For some reason 40 hours a week at a desk has much more appeal than 80 hours a week on a construction job, outdoors in all kinds of weather at all hours of day and night.

If this approach does not succeed, there will probably be one less engineer, and one more necktie salesman in the near future.

EDITOR'S NOTE: We break our rule against anonymity once more to give the ladies their last word on one poor male's contention that "engineering is fun" (ENR Mar. 21, p. 192).

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Service "Professionals"

SIR—I cannot help but sympathize with the letter entitled "Wife Questions Salaries" (ENR April 18, p. 8) wherein she states that engineers are supposed to be professional men.

As a professional engineer, member of the Armed Forces, I agree with the lady that in the light of actions favoring other professional groups in the service to the exclusion of engineers, the public generally has come to look upon engineers as less than a professional group. For example, doctors and dentists in the service have received accelerated promotions, constructive service credit for time spent in professional schools, and extra pay of from $100 to $250 a month more than accorded other professional groups of the same rank.

I also note in the Army-Navy-Air Force Journal of March 2, 1957, that Senator Thurmond has introduced legislation to authorize accelerated promotion and increased pay for service lawyers. As stated therein the proposal gives the lawyer-officer who secured his legal education prior to military service a three-year service credit for pay and promotion purposes. It explains that this is designed to compensate for the time which the officer spent in law school and which prevented him from entering on a military career earlier. It is significant to note that I have not been compensated in this way for the time which I spent in engineering school attaining a master's degree before entering military service.

More significantly, unlike the American Medical Association and the Judge Advocate's Association, no professional engineering groups have come forward in favor of Armed Forces engineers. This seems to be typical of the lack of interest on the part of these organizations in improving the lot of indivdual engineers.

Incidentally, the rate at which we are falling behind Russia in the numbers of engineers has been often cited as a

(*Continued on page 10*)

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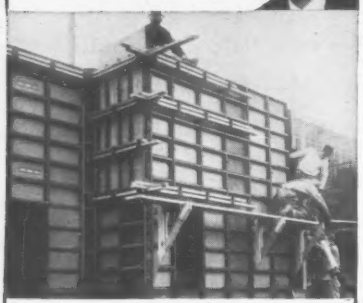

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critical deficiency in the Cold War. However, nowhere in the press have I read of any shortage of lawyers in the Defense Program.

Unless engineers as individuals continue to emphasize the PROFESSIONAL aspects of their chosen careers, and unless the national professional engineering societies vigorously exert more specific efforts in their behalf, similar to action by the American Medical and Dental Associations and the various bar associations, the engineering profession will be further depressed in importance in the eyes of laymen.

D. E. CONNOLLY
Commander (CEC) USN

The Highway Planners

SIR—I could wish the editorial in the April 11 issue "Planning for Highways" had been based on a reading of my entire paper on Metropolitan Planning and the Federal Highway Program rather than on limited newspaper excerpts. You might, then, have quoted me as also saying that highway engineers "are, by and large, skilled and competent—perhaps more so in their field than we planners are in ours".

My paper was intended to bawl out not the highway engineers, but the planners—and local, state, and federal legislators—for the fact that there has been so little metropolitan planning done which could have been helpful in highway planning decisions. And the kind of planning I referred to, in discussing the interstate system, was not the basic determination of cities to be interconnected, but the local determination within metropolitan areas of route and interchange location.

My point was that these decisions—minor to the interstate concept—will have enormous influence locally, on where new industry, shopping and houses will spring up. And—is this not true?—that very rarely do highway engineers study the alternative impact of alternative local routes upon these factors unless city and regional planners are there to work with them.

I also said that, in my experience, good highway engineers are always ready to collaborate with regional planners, where the planners exist and have done their own jobs well.

My statement that some of the highway billions may be "spent for the wrong things in the wrong places" followed the thought that, from a national and metropolitan point of view, it might have been better to spend a few of the billions on public rapid transit. Though this opinion is debatable, it it not an indictment of highway engineering skill in any way.

I would like to reaffirm my hope "that the state and federal engineers even though the law does not require will pause and listen to what metropolitan and local planners and planning agencies have to say; and, where it is not too late, that they will modify their plans if they recognize the soundness and wisdom of what they hear."

JOHN T. HOWARD
Associate Professor of City Planning
Massachusetts Institute of Technology

EDITOR'S NOTE—Professor Howard has a just complaint, since his paper was not an indictment of highway engineers as planners, but a criticism of metropolitan planning generally, as being inadequate for the needs of transport. On this point, we share his opinion.

Specifications Corrected

SIR: An article in the April 4 issue of ENR (p. 26) on the award of a contract to the Western Contracting Company of Sioux City, Iowa, for construction work on an air base at Grand Forks, N. D., has been called to the attention of this office. Errors in fact have been noted.

a. The existing runway is 100 ft by 7,500 ft—not 10,000.

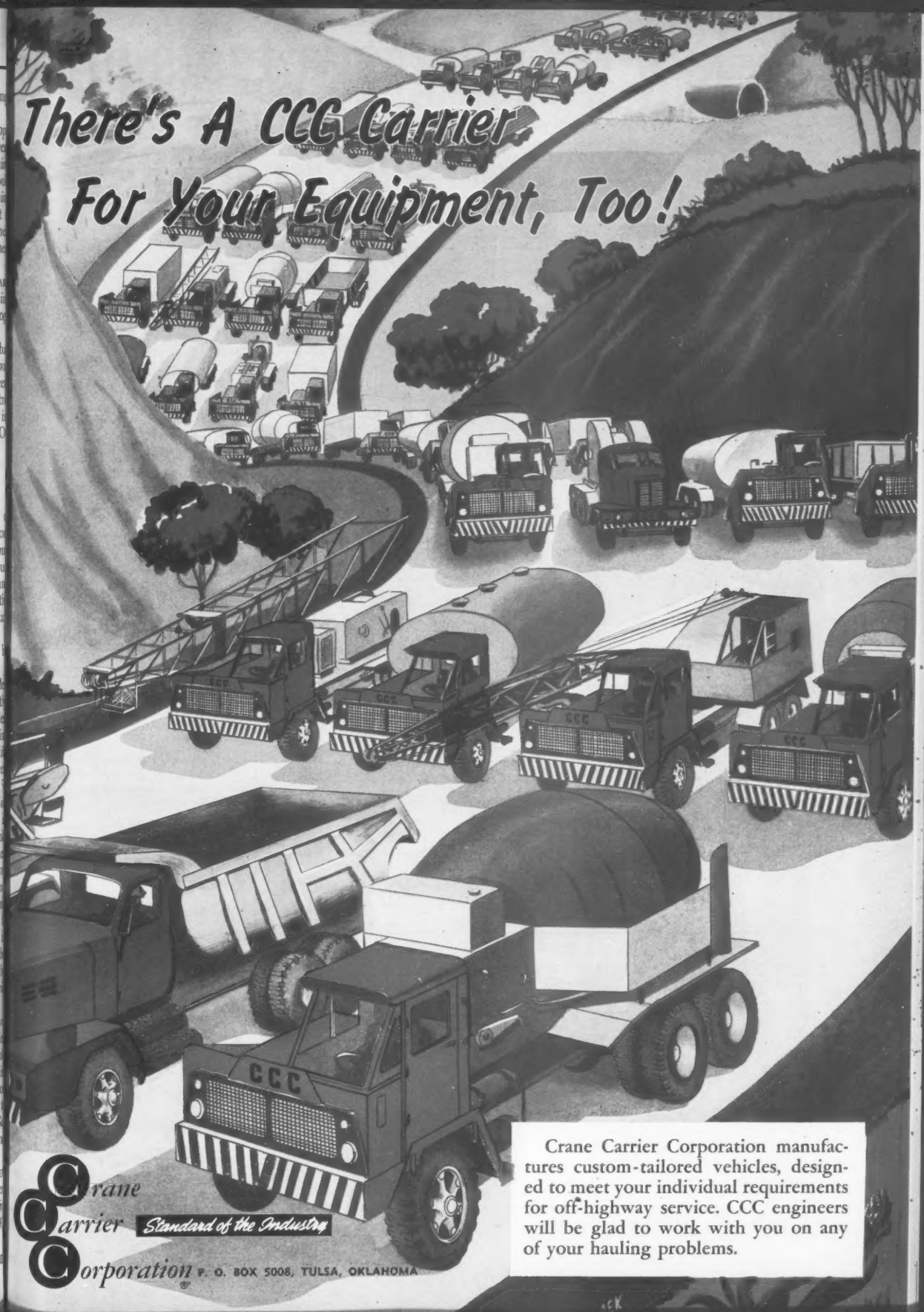
b. Bid specifications for surface tolerance were $\frac{1}{8}$ in. in 16 ft; consequently the revised surface tolerances, unless added by negotiation prior to signing of the contract or by contract modification, are not included in the project.

c. Original criteria specified a 150 ft runway with possible later expansion to 200 ft width. Crown was offset in design of 150 ft width so that it would be on runway centerline when widened to 200 ft. Later developments resulted in change to a heavy bomber base for use by the Strategic Air Command which would require a 300 ft runway. Due to the amount of work in place it was not possible to change the location of the crown; consequently the crown on the completed runway will be offset 50 ft from the centerline.

d. Design depth of the airfield pavement is 6 ft, since the freezing index is over 3,500 degree-days. The available deposits within economical haul distance for select subgrade contain too much minus 0.02 mm (over 3%) to be classified as frost-free materials. So design was based upon using F-2 and F-3 type soils as select subgrade.

GLEN O. CLAUSSEN
Major, Corps of Engineers
Executive, Technical Liaison Div.

(Reader Comment continued on p. 14)



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Chicago tests prove hig

USS Steel H-

To provide authentic data showing USS ste H-beam piles capable of meeting limits allow by the City of Chicago Building Code, Unit States Steel Corporation had the Armour Resear Foundation of Illinois Institute of Technolo conduct tests on a site having soil condition typical of the Loop area. Tests were made at t corner of Harrison and Halstead Streets. A to of 17 piles were driven, eight of which were us as anchor piles. Data on the nine test piles shown in the table below.

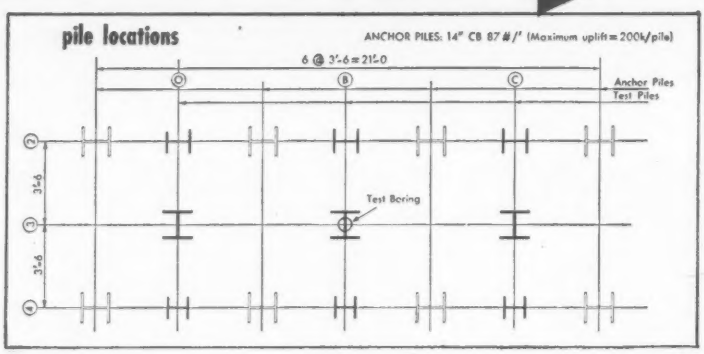
See for yourself

USS Steel H-Beam Bearing Pile Te

Pile Number								
Pile Size								
End Conditions								
Proposed Allowable Load—Tons								
Test Load—Tons								
No. of Blows in Last Inch								
Estimated Design Load by ENR Formula‡								
Total Deflection at Proposed Allowable Load								
Total Deflection at Test Load								
Rebound from Test Load								
Total Net Settlement								
Allowable Total Net Settlement by Chicago Code								
Load at Failure—Tons								
Avg. Unit Stress (fs) at Failure—psi								
Total Deflection at Failure								
Rebound from Failure Load								
Net Settlement after Removal of Failure Load								
Manner of Failure								

*Final driving of all piles by Vulcan type OR hamm
30,225 ft. lbs. ‡ENGINEERING NEWS formu

0.0' Ground line—Approx. +14.0' Chicago
datum
—10.0' Fill and Sand
Tough clay with sand and gravel seams
—17.5'
Blue clays
—56.0'
—58.5' Hard blue clay
—60.0' Very dense silt & clay
—63.5' Med. dense silt & clay
—68.5' Hard blue clay & silt
—74.0' Grey silt, clay & sand—med. dense
—79.0' Hard blue clay, silt & gravel
—80.5' Sand & gravel
Grey silt—trace of clay, sand & gravel. Very dense. Hardpan
—104.3'
Rock—Dolomitic limestone



THEIR NATURAL ADVANTAGES *make*

USS STEEL H-BEAM BEARING PILES *the logical foundation for heavy, multi-story buildings*

The design possibilities, low cost, and ease of installation of USS steel H-Beam bearing piles offer definite advantages over foundation caissons for supporting heavy buildings. Buildings of any height can be founded on steel H-Beam piles without limitations resulting from insufficient penetration. Excessive amounts of free water, marsh gas, and other adverse conditions which sometimes halt construction of open-pit caissons, offer no obstacles to obtaining required design loads with steel H-beam bearing piles. Furthermore, the cost in time, materials, and equipment needed to construct open-pit caissons makes USS steel H-Beam Bearing Piles the most economical type of foundation you can use.

SEE THE UNITED STATES STEEL HOUR. It's full-hour TV program presented every o week by United States Steel. Consult y local newspaper for time and station.

ve high load-carrying capacity of

ee H-Beam Bearing Piles

All of the nine piles tested exceeded the requirements of the Chicago Building Code, except for the closed end, 14-inch H-beam bearing pile that failed by excessive net settlement at a load of 370 tons. This pile was not driven to hardpan inasmuch as the desired driving resistance was attained before hardpan was reached. Therefore, it seems logical to assume that for loads of the magnitude of those under discussion, firm seating in hard soil should be a requirement.

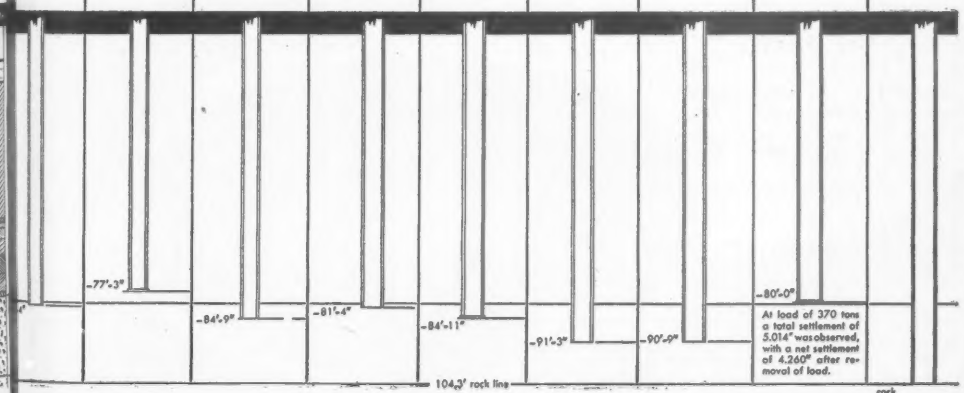
Here again is proof that USS Steel H-Beam Bearing Piles are capable of carrying heavy foundation loads into stable mediums lying at great depth. Their capacity for high unit loads, both vertical and horizontal, permits fewer piles and fewer driving operations for a given load. They are readily handled in the field by ordinary equipment, are easy to splice, eliminate jetting, and withstand rough handling.

If you would like to receive detailed information regarding your particular foundation problems, please contact the office nearest you.

ata*

(In accordance with Chicago Code requirements—in addition B4, B2 and B3 were tested to failure.)

C4	B4	02	C2	B2	03	C3	B3
10" CBP 42#/'	10" CBP 42#/'	12" CBP 53#/'	12" CBP 53#/'	12" CBP 53#/'	14" CBP 117#/'	14" CBP 117#/'	14" CBP 117#/'
Closed	Open	Open	Closed	Open	Open	Closed	Open
75	75	100	100	100	200	200	200
150	150	200	200	200	400	400	400
10	31	7	7	Refusal	22	24	On Rock
151	228	124	124	.....	208	213	.....
0.312"	0.168"	0.359"	0.338"	0.270"	0.378"	0.454"	0.293"
0.976"	0.501"	2.147"	1.321"	0.637"	0.891"	See Below	0.695"
0.730"	0.549"	0.754"	0.810"	0.670"	0.723"		0.657"
0.246"	—0.048"	1.393"	0.511"	—0.033"	0.168"		0.038"
1.50"	1.50"	2.00"	2.00"	2.00"	4.00"	4.00"	4.00"
	240			300			635
	34400 psi			38500 psi			36900 psi
	0.985"			1.079"			2.669"
	0.831"			0.932"			1.176"
	0.154"			0.147"			1.493"
	Local Flange Buckling Above Ground			Local Flange Buckling Above Ground			Yielding Over Cross Section of Pile



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UNITED STATES STEEL

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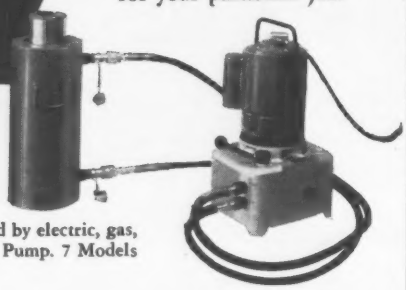

1 "RE-MO-TROL" PULLERS

The "Re-Mo-Trol" Puller Unit is a powerful hydraulic Ram connected by high-pressure hose and remotely operated by electric, gas, air-powered or with hand-operated Pump. 7 Models have *"center-hole"*.

CAPACITY	APPLICATIONS	BENEFITS
10-100 tons 11 models	tensioning wire in pre-stressing concrete, pulling or pressing sleeves, gears, pinions, etc.	lift-pull-or-push in any direction easily & safely from a distance!

2 SIMPLEX "JENNY" CENTER-HOLE PULLERS

The "Jenny" is a rugged, *self-contained* unit for pulling or pushing the most difficult jobs with hydraulic power and efficiency.

CAPACITY	APPLICATIONS	BENEFITS
30-100 tons 6 models	mines, oil fields, shipyards, railroads, diesel, general maintenance, post tensioning concrete, etc.	push-pulls-lifts without torque through "center-hole".

3 ROL-TOE JACKS

CAPACITY	APPLICATIONS	BENEFITS
10, 25 and 50 ton 3 models	for toe lifting heavy machinery and equipment, also transformers.	lifts full capacity on cap or toe!

4 STANDARD HYDRAULIC JACKS

CAPACITY	APPLICATIONS	BENEFITS
3-100 tons 8 models	all general construction industrial maintenance problems.	smooth lift power, service-free operation!

500 lb. "Jack in a Box"

This 3" high Simplex Screw Jack will lift 500 pounds two inches. Has all operating and construction features of larger screw jacks. Also is ideal desk ornament, paper weight. 50c ea. Shipped prepaid cash or check.

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. . . Reader Comment

Water Rights Data

SIR—We read with interest your arti in the May 9 issue, "States Face U to Water Rights Problem". W thought you might be interested in report made by an interim committ in 1955 and the two Oregon statu that were enacted as a result of th study.

One of the laws calls for initiation studies for the allocation of unappr priated waters for future maximu beneficial use. This is to be accom plished without basis of either statuto or constitutional priority. As you w recognize, this concept is a deviati from the accepted appropriation do trine of "first in time, first in right".

The other law, a new groundwat code, has some interesting sections pe taining to the administration of grou waters in "critical" areas.

DON LA
Secreta
State Water Resources Boa
Salem, O

Credit Omitted

SIR—A reading of the article "Op Caissons Go Under Air at 85 Feet", A. L. Bentley, Jr., Foundation Engin of A. Bentley & Sons Company, Toledo (ENR March 28, 1957, p. 6 fails to disclose where any credit h been given The Foundation Compa for its part in this operation.

The layout of the equipment, t design of the platforms necessary carry the additional weight required hold the caissons in position after t air was applied and all other pha necessary for the belling of the caisso and concreting of same under air w planned and performed by The Fou dation Company. We believe that, all fairness, this should be noted a part of the article.

The work in Toledo was carried under the direction of our Gene Superintendent, R. M. Johnsen Field Superintendent, Thomas O'Sh

NEIL O'LEA
Vice-Preside
The Foundation Compa
New York, N.

CALENDAR

Air Pollution Control Association, golde jubilee meeting, St. Louis, Mo., Jun 2-6.

American Society of Civil Engineers, spring convention, Hotel Statler, Buf falo, N. Y., June 3-7.

Annual Meeting of American Society fo Testing Materials, Chalfonte-Haddo Hall, Atlantic City, N. J., June 16-21.

Wire Reinforcement Institute, Inc., a nual spring meeting, Greenbrier Hote White Sulphur Springs, W. Va., Jun 24-25.

Concrete Reinforcing Steel Institute, a nual meeting, The Greenbrier, Whit Sulphur Springs, W. Va., June 24-29.

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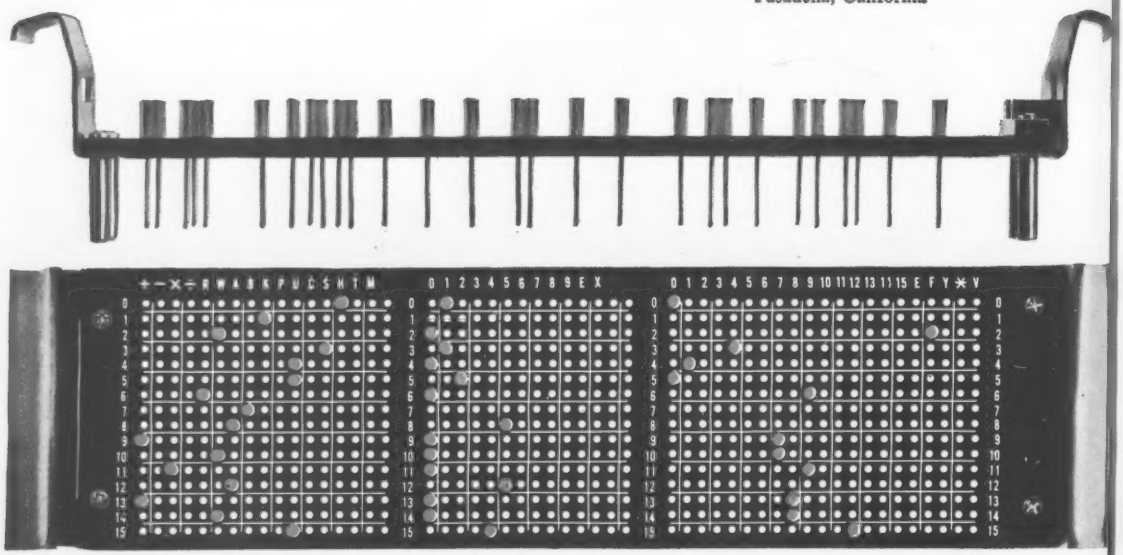

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2 FM-4 WAGON DRILLS

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Here's a high-powered rock-drilling combination that can really set the pace for both speed and economy in modern road work. The proved *dependability* and smooth, trouble-free performance of the Gyro-Flo rotary compressor keeps it *on the job,* with virtually no down-time for attention or servicing.

The versatility and easy mobility of the Ingersoll-Rand FM-4 Wagon Drills means fast, easy setups on any type of ground. Their tremendous striking power, positive rotation and exceptional hole-cleaning ability add up to maximum drilling speed, even in the hardest rock.

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IR CONTRACTORS' COMBINATION

2-503

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Can you guess how many miles of such wire were used in the 120,000-foot 66" Lock Joint Prestressed Concrete Embedded Cylinder Pipeline for Wichita's water supply system? The answer will be found—not too carefully hidden—in the picture above.

Samples of all such high tensile wire used in the production of Lock Joint prestressed pipe not only are certified by mill tests, but also must meet the exacting standards demanded by rigorous tests to which they are subjected in Lock Joint's own laboratory. This is only one of the many quality control measures employed in every phase of the manufacture of Lock Joint Pressure Pipe to assure the customer the finest product obtainable.

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ENGINEERING NEWS-RECORD

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CONTENTS

NATIONAL AFFAIRS

Rapid Mass Transit—A Prime Need 23
AISC Explores Engineering Advances 26
Plans Set for Prestressers' Meeting 27
Nursing Homes—No. 1 Fire Traps? 27
Multistory Garage Also Drive-in Bank 27
Denver Tries Sewage Flotation Process 28
Pollution Fight Makes Headway 28
Superstructure on "Croquet Wicket" Piers 28
Compromise Plan for Niagara Project 29
Chicago Bridge Split for Repairs 29
Bright Facades for New York, Miami Beach 30
Lake Links Start Getting Seaway Depth 31
States Set Right-of-Way Rules 32
GE Atom Lab to Feed PG&E Power 32

FEATURES

Building a Railroad Fill Over Salt Lake 34
How Engineers' Salaries Have Changed 46
Mud Dump to Take 22 Years to Fill 48
Conflicting Demands for Water 57
Pipe Caissons Go 135 Feet Down 60
Drive to Keep New York Port on Top 66

NEW PRODUCTS

Portable Drill Does Heavy Work 79
Spreader Box Places Material Fast 79
Backhoe Attachment Has 9,000 lb. Breakaway 80
Asphalt-Patching Mixer Saves Time 80
Concreted Tension Flange Saves Steel 82
Cooling Tower Uses Plastic Baffles 83
Portable Seismograph for Many Uses 83
Publications 84

MEN AND JOBS

Key Men in BPR's New Setup 90

INTERNATIONAL

Brazil Builds Novel Garages 101
Canals Planned for India, Russia 102
Copper Skin to Cover Concrete Dome 102
Ecuador Hires U.S. Firm for Road Study 102
First New Bordeaux Bridge Since 1821 102

RESEARCH

Prestressed Concrete Roadway Studied 106

BUSINESS AND FINANCE

Number of Contractors Sets Record 172
Liberal Housing Law Coming Up 176
Awards Up Slightly in May 176

LABOR

More Roadbuilding Pacts Signed 178
Safety Promoters Face Big Task 178
Two New Codes for Labor 179
Two Die in Alabama Strike 179
Bill Would Regulate All Employees Funds 180
Wage Gains Reported by District 50 180
Canadians Protest Use of U.S. Labor 180
Legislature Tightens Welfare Funds 181

Reader Comment ... 9
Calendar 14
Washington Observer 21
Obituaries 96
Books 108
Legal 115
Unit Prices 128
Materials Prices 130
Construction Reports. 133
Scoreboard 170
Editorials 196

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THE CONSTRUCTION WEEK

PARTNERSHIP: ODDS CHANGE—New data on Reclamation's Trinity River Project, now awaited by the House Interior Committee, might put the kibosh on hopes that this was to be a partnership with Pacific Gas & Electric. Last February, Interior Secretary Seaton asked that falling water of the $224 million project be sold to the private utility for power production, and he had figures that showed it would be a good deal for the taxpayer. The figures were questioned (ENR May 16, p. 23) and the new data soon to be released are said to indicate no significant saving to the government in letting PG&E buy the water and sell the electricity. This surely changes—maybe reverses—the odds on Congress voting a partnership arrangement for the power at this dam, which is already under construction.

MEASURE TO WATCH—It will be worth watching the progress in Congress of H.R. 231, produced by San Francisco's Congressman Millard and rather unobtrusively slipped into the hopper a couple of weeks ago. The measure calls for a study of urban transit problems, and, among other things, recommendations for possible federal appropriations to aid in solving urban transit problems.

Highway groups in general are opposed—they look on any such a measure as a "raid" on highway funds. But powerful support is building up behind the bill, on the theory that rapid transit is the salvation of the central cities, now choked with traffic (see page 23).

FAST PACE AT HYPERION—In only 7½ days ending Monday May 27 a 22 in. pipeline was pulled nearly 7 miles into the Pacific Ocean to serve as a sludge outfall for Los Angeles' Hyperion sewage treatment plant. The operation was directed by Sam Collins of Houston, Tex., and used techniques developed by him. The ⅜ in. thick steel pipe with cement mortar lining and coating was preassembled on the beach in 600 ft sections. Two lengths were welded on at a time permitting a winch on an offshore barge to pull the line 1,200 ft along the ocean bottom. The operation was repeated until the complete line was in place with discharge and at nearly 300 ft depth. Yet to be done is burying the pipe in sand through the surf area and final testing. Contractors on the $2.5 million project are Healy-Submarine-Delong, a joint venture.

FLOOD BREATHER—All rivers in the flood-stricken Southwest were receding this Monday after a week of relatively light and highly localized rains. However, many of the streams remained at flood stage and the situation was still dangerous. Rivers in Texas were quiet; the Red, Verdigras and Arkansas Rivers in Oklahoma were out of their banks. Latest Corps of Engineer estimates put damage at $106 million in the Tulsa and Forth Worth districts and damage prevented at $118 million.

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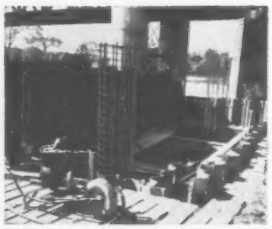
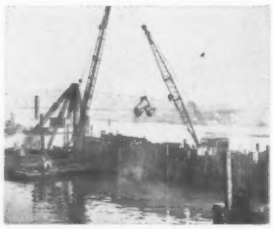
All these jobs moved on schedule, with no delays, no capital tie-up, no substitute lengths or sections.

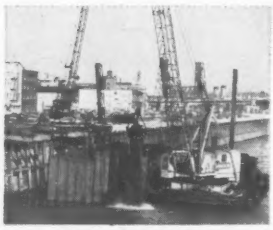
They all used the *"FOSTER PILING RENTAL PLAN"*



Colorado River Bridge Eagle Lake, Tex.
Bob Baker Construction Company



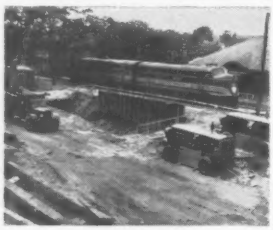
Penn-Lincoln Parkway Pittsburgh, Pa.
John F. Casey Company



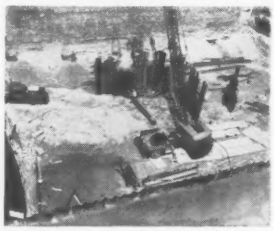
Portland Oregon Bridge
Manson Construction & Engineering Co.

Post-Tribune Building Gary, Ind.
Prosser Howells, Inc.

Murchison Tower Bldg. Denver, Col.
Mead and Mount Construction Co.

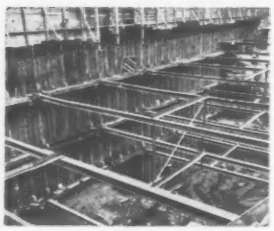


Boston & Maine Railroad
Grade Crossings Winchester, Mass.
C. J. Maney Construction Co.

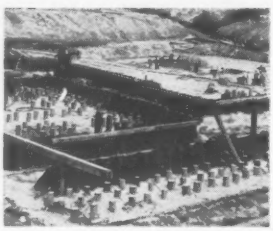


Fulton County Savings and Loan Association
Office Bldg. Atlanta, Ga.
J. A. Jones Construction Company

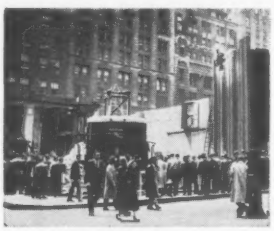
Austin Power Plant No. 2 Austin, Tex.
Brown & Root, Inc.



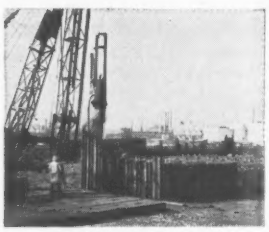
Mellon Square Garage Pittsburgh, Pa.
H. K. Ferguson Company
Equipment & Supplies Inc.—Sub.



Mississippi Power Co. Plant, Gulfport, Miss
Southern Services, Inc.
Boh Brothers Construction Co.



Chase Manhattan Bank Bldg. New York
Turner Construction Company
Thomas Crimmins Contracting Co.



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WASHINGTON OBSERVER

- **U.S.-Canada to swap Columbia River costs**
- **Low federal loan rates here to stay**
- **Fast tax write-offs still politically hot**

- **The U. S. will swap Columbia River information with the Canadians** as a step to help along the high-level negotiations over how to make the best use of the valuable waters of this international basin.

  As things stand now, officials don't know the essential data being used by their opposite numbers in determining cost-benefit ratios—the technical arithmetic that has to be the basis of deciding eventually the development plan that is most desirable.

  The Canadians definitely have offered their figures and State Department officials are gathering advice from half a dozen interested U. S. agencies involved. The U. S. hope is that full revelation of U. S. figures will demonstrate the benefits to both countries of keeping all Columbia River water within the basin. Then the biggest issue involved would be how to pay Canadians for storing water that would be used to increase power output of downstream U. S. plants.

—

- **Below-market interest rates for federally backed construction programs aren't likely to be changed.** The Administration—particularly the Treasury and the Budget Bureau—want legislation allowing them to set interest rates on agency loans high enough to equal the cost of money borrowed by the Treasury.

  A number of construction programs are financed at cheap-money rates fixed by law—among them college housing, Rural Electrification projects, and Small Business Administration disaster loans.

  But Congress won't give up its authority to fix interest rates where it chooses to benefit specific programs with voter appeal—regardless of their effect on the balancing of the budget.

  A good test came when the Senate voted down a proposed change in interest rates for college housing loans. There, the proposal was to increase the rate charged from the present 2⅞% to 3.5%. The REA rate, now 2%, is equally untouchable, as far as Congress is concerned.

—

- **Fast tax write-offs to help industry build new plants still are alive but only as a political issue.** The agitation over proposals to kill the private development of the Hells Canyon site in favor of a federal high dam gave amortization its latest publicity spin. Public power legislators picked up fast tax grants given Idaho Power to show that these private dams now under construction aren't free of cost to the taxpayer. Those opposing fast tax write-offs for non-defense facilities harp on the so-called hidden cost. They point out that the tax aids enable companies to reduce tax bills for five years to make up for this "lost revenue," the government borrows money in the open market—and pays interest.

  Odds still are against any law directing that a high dam be built to supplant the three low dams licensed by FPC to Idaho Power Co.

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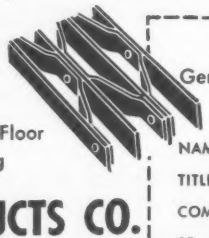

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None-too-rapid mass transportation such as this—according to the First National Conference on Urban Transit—when aided and abetted by the burgeoning interstate highway system, may destroy the central city as we know it; therefore, planners should focus their attention on . . .

Rapid Mass Transit—A Prime U.S. Need

Unless the integration of transit in all its forms is given proper consideration, the multi-billion U. S. highway program could produce chaos and threaten the functioning of our cities.

This was the consensus that came out of a two day session in Chicago last week, as transit, highway and municipal officials met in the First National Conference on Urban Transit. At the end of their sessions, they took steps to form a permanent organization dedicated to making their conclusions clear to taxpayers and government alike.

The peculiar paradox that the automobile—having first given Americans unprecedented freedom of action—is now threatening that freedom and the existence of the central city was clear from the formal papers and the discussions at the sessions.

The feeling can be summed up about this way:

A highway program that concentrates entirely on creating more and more arteries that will pour more and more traffic into already jammed city centers can only go on creating added traffic problems, never satisfy the demand.

One speaker commented that the final result conceivably could be nothing but vast areas of paved parking lots in what once were the central cities. "And when that happens," he added, "the reason for the highways in the first place—to get to the central city—will also be gone, and the highways themselves will be useless."

Also, the question is no longer the classic "rail vs rubber" but rather "rail and rubber."

The real answer to the city traffic problem, said the experts, is not more and more highways; but coordination of the highway plans, of community plans and of transit. Rapid transit that can pick up passengers at centers outside the crowded downtown areas and move them at speed and in reasonable comfort to their jobs or to stores, can take thousands of cars off the streets and off the available downtown parking areas. Thus it can relieve congestion for commercial vehicles as well as the others who may have no other means of reaching the central city.

There is, however, one major fly in this ointment—money.

It has been painfully apparent for many years that transit systems cannot be operated at a profit. So the integrated "rubber and rail" program will have to be subsidized in some way—in effect, a charge for service instead of a tax for new roads, or loss of taxable property cleared for new roads.

• **Urbia and suburbia**—According to Walter S. Blucher, president of the

. . . Rapid mass transit—a prime U. S. need

American Institute of Planners, a point in need of clarification for proper understanding of the problem is the real meaning of the words "metropolitan area." This is an area that can no longer be considered in terms of arbitrary city boundaries, or even in terms of the present limits of transit systems. The automobile has permitted the breaking of the old pattern of development along the lines of the transit systems and has engendered the vast, sprawling one-family-home developments that surround most U. S. cities today.

But people in those sprawling suburban areas continue to seek employment, pleasure, education, shopping in the central city, commented Mr. Blucher. "And, if they can't come by transit, they try to come by automobile."

"Part of the trouble," added Kent Hoover, project director of the Washington, D. C., mass transit survey, "is the result of predictions of a stagnant economy, made quite freely a decade ago.

"But the best available predictions now indicate that by 1975, 75% of U. S. residents will be living in urban areas. And our cities today are 1940 models or older. The result has been a vast, uncontrolled sprawl over the countryside, where unplanned, unintegrated developments have been permitted to swallow up areas without any consideration of basic community requirements. If this isn't controlled, relief will be actually impossible in a few years."

• Governments in the way?—A serious problem, in view of these points, is the archaic form of local governments.

Speakers such as civil engineer Walter S. Douglas of the New York consulting firm of Parsons, Brinckerhoff, Hall & Macdonald and Frank H. Simon, executive director of the Metropolitan Rapid Transit Commission of New York-New Jersey, pointed that out in detailing studies recently made in San Francisco and New York. Both men made it clear that the many small governmental units involved have forced consideration of authorities or "districts" since transit, in their words, takes no more cognizance of arbitrary political subdivisions than does a river or any other natural phenomenon.

"Individual smaller communities can't afford the cost alone, nor are they likely to produce systems that can be integrated with the others readily. The problem has to be attacked from a regional viewpoint—and considerations of overall planning of the community as a whole must also come into the program," said Mr. Simon.

"The transit problem," added Philadelphia's Mayor Richardson Dillworth, head of the U. S. Conference of Mayors, "has reached the stage now that stream pollution and flood control reached 40 years ago. It's too big for any one community."

• Problem: The commuter—From all the discussions, it was apparent that the real problem for all metropolitan areas is not the occasional visitor, or the trucks and commercial vehicles. It is the commuter, who comes into the same area every day and—if he drives—must leave his vehicle, occupying valuable space, in the central city every day for up to nine hours. And then, since most businesses close down at the same time of day, the commuter tries to get out of the city in a single mass movement.

This is the same problem faced by the nation's commuter railroads, of course—heavy peak loads in one direction. But the speakers made it clear that by "commuter" they didn't mean only the suburbanite. They also meant workers who live in outlying areas of the city itself.

And all that, said Donald C. Hyde, general manager of the Cleveland Transit System, means two things:

- Transit must be attractive in terms of speed and comfort.
- Local transit must be provided at central-city terminals to distribute the commuters, once they have reached the central city.

The trouble with all this, however, is that transit in general doesn't make money. In every city that reported, the systems were running at annual deficits—at least if the figures on income are compared with overall investment.

The New York, New Haven & Hartford Railroad, for instance, said its president, George Alpert, has lost as much as $15 million a year on its commuter operation and has been forced to make the loss up out of freight revenues. The proposed New York-New Jersey rapid transit loop (ENR May 30, p. 24) is expected to run at a loss of about $12 million a year. Boston's metropolitan transit system, under state law, allocates its losses yearly to the communities it serves.

But subsidy in some form to the transit system should really be considered as a subsidy to the transit rider, not the system, according to Mr. Simon. "We subsidize the highway user at great cost, and no one seems to get too excited," he said. "The transit system—which can carry many times the passengers in peak hours than can the equivalent highway—should also be considered as a part of the whole problem. And if it needs help in the way of added funds, why shouldn't the community consider such help a part of its job?"

Another point that shouldn't be overlooked, commented several speakers, is that the existence of a good rapid transit system increases property values rather than taking valuable property off the tax rolls, as must be done in construction of such big city superhigh-

Potential Cures for Transit Ills

As urban populations continue to grow and metropolitan areas expand, the transportation problem will become more and more severe. To ease the situation—both in the present and future—the urban transit conference offers these four recommendations:

1. Park then ride—which combines private and public transportation—would employ parking areas arranged conveniently around the central city where motorists could leave their cars and switch to more efficient and speedier forms of mass transit.

2. Feeder systems—which combine local and express service—would use local bus lines to feed rapid transit lines entering the cities and thus reduce the number of vehicles on urban roadways.

3. New rapid transit lines—in conjunction with new highways—would offer the advantages of moving more people faster than if they used their own vehicles, and right-of-way would be more efficiently utilized.

4. Elevated lines—when properly planned, designed and executed—do not have to be ugly or noisy, and they can offer worthy economies in the use of high-price urban real estate.

ways as Chicago's 8-lane Congress Street Expressway. Cleveland's Shaker Heights transit line, for instance, was credited with adding 37% to property values along its right-of-way.

• **Adding up**—In sum, the two day meeting seemed to come to agreement on these transit recommendations:

1. Perhaps the most important contribution to lessened central city congestion is a park-and-ride combination, where commuters from outlying areas are provided convenient parking space outside the city center, and induced to leave their cars there and ride rapid transit to the city.

2. A similar arrangement can be made by having local bus lines feed rapid transit lines outside the congested centers, keeping the buses off the streets.

3. New rapid transit lines should be built in conjunction with new highways. For the saving in right-of-way costs as well as appearance, the two-track line that will soon occupy the median strip of the new Chicago expressway can move more persons in rush hours than can the entire eight lanes of the surrounding highway.

4. In considering forms of transit, the general public must get away from the thought that all elevated structures have to be as ugly, noisy and inefficient as those in New York and Chicago—both built a half century ago.

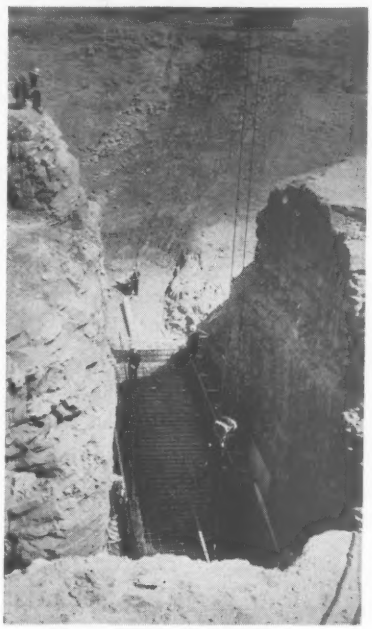
• **Sober and serious**—The men who reached these conclusions at Chicago were a surprising cross section of many interests concerned with the preservation of the central city, and with the future of the urban areas.

They included the men quoted above and such respected highway officials as Pyke Johnson, former President of the Automotive Safety Foundation and holder of the American Association of State Highway Officials' prized Bartlett Award; Virgil E. Gunlock, now chairman of the Chicago Transit Board; railroad officials like Bruce Dwinell, vice president of the Rock Island Lines; Philadelphia's Mayor Richardson Dillworth; and representatives of municipal and privately owned transit systems, parking lot operators, a congressman and even the executive director of the Farm Roads Foundation.

More than 225 such men attended the sessions, called informally under the temporary chairmanship of Walter J. McCarter, General Manager of the Chicago Transit Authority.

• **Organization**—As the meeting broke up, it ended on a note of optimism. By resolution, the group appointed Mr. McCarter to act as chairman of a committee that will look into possibilities of forming a permanent organization, and disseminating information on the transit problem to members and public officials.

Most in attendance agreed that the biggest job before them would be one of selling—to the general public, and to the political leaders. "Transit, somehow, has gotten to be not a nice word," said one man. "But it can be the salvation of the cities. It will have to be restored to grace."



A-Plant Footings Designed To Hold a 190 ft Sphere

Foundation work has started on Commonwealth Edison's $45 million, 180,000 kw Dresden Nuclear Power Station, 50 miles southwest of Chicago. Erection of superstructure features including a 190 ft steel sphere to house the reactor soon will be under way.

General Electric Co. is the builder of the station and its dual-cycle boiling water reactor. Bechtel Corp. is the engineer-contractor.

Clearing and excavation work began some months ago, but the start of major construction work will be recognized officially by celebrations next week (June 12) at the 950 acre site in Grundy County, Ill., at the confluence of the Kankakee and Des Plaines Rivers.

Commonwealth Edison will own and operate the Dresden plant, but $15 million (one-third) of its costs will be paid by seven cooperating companies interested in the research and development opportunities. Construction is being pushed in anticipation of government-backed liability insurance being legislated to cover the owner in operating this first fully private A-power plant.

Price Fix Charged

Plywood wholesalers are indicted in Detroit

Lumber dealers, builders and individual users in Detroit, Mich., were victims of a six year price-fixing conspiracy by Douglas fir plywood wholesalers, an indictment by a Federal Grand Jury charged last week.

The indictment charged that 10 corporations dealing in Douglas fir plywood and seven representatives of the corporations violated the Sherman Anti-Trust Act.

Effect of the alleged price fixing was to set costs at unfair, non-competitive levels, according to Edward Feeney, head of the Federal Anti-Trust Division in Detroit.

The Federal Grand Jury, in its indictment, charged that the price-fixing practices were in effect from 1949 until January 1955.

Mr. Feeney claimed that the device used for the alleged price fixing was an informal association called the "Plywood Credit Group." The group itself had no legal status and therefore could not be indicted, Mr. Feeney said.

New TV Tower Will Replace Fallen Nashville Structure

Construction is expected to begin within three months on a 1,369 ft television tower in Nashville to replace a nearly completed tower that collapsed last Feb. 4, killing four men (ENR Feb. 14, p. 24).

The new tower will be constructed on a 101 acre site, located atop a 680 ft hill in West Nashville. The site is said to be large enough to eliminate any danger to nearby residents.

General Electric Co. will have the overall construction contract as it did for the previous one. Completion is expected by the end of the year.

14 Story Parking Garage Will Be Built in Boston

An automatic parking garage now under construction in downtown Boston will rise 14 stories when completed. The new garage will be located on a 6,900 ft plot.

Two high-speed, gearless, traction-type elevators, supplied by the Bowser Parking System Co., will move cars vertically, horizontally and diagonally to parking spaces in the building.

The building was designed by Riskin & Fried, Boston architects.

Two other municipal garages are slated to be built in Boston as part of an overall plan of off-street garage parking sponsored by the city government.

AISC Explores Engineering Advances

Fabricators bewail manpower shortage, predict wider use of bolting and high-strength steel

Steel fabricators see more demand for their products but need more draftsmen and detailers. They look for greater usage of high-strength steel and advanced design methods. They expect wider use of high-strength bolting to speed up shop fabrication.

After two days of formal papers, panel discussions and corridor conferences at the 9th Annual Engineering Conference of the American Institute of Steel Construction, held in Chicago last week, these trends appeared to be of top importance to fabricators.

Sounding the keynote of the conference, N. P. Hayes told his 300 listeners that new steels and advanced design methods are contributing greatly to more economical construction. Mr. Hayes is president of the AISC and the Carolina Steel and Iron Co.

• **High-strength steel**—"High-strength, low-alloy steels have a challenging future," he said. "For the past 10 years research studies have been carried forward on these materials, and we now stand at the threshold of substantial increases in their application."

In a paper on design and fabrication of high-strength steel structures, Ethan F. Ball, chief engineer of fabricated steel construction, Bethelehem Steel Co., declared that more high-strength steels are being used in bridge construction chiefly because spans are getting longer and longer. In a number of these long-span bridges, he said, engineers have found that the saving in dead weight and reduction in other costs have more than balanced the additional cost of the stronger steels.

Building construction generally is not suitable for the use of high-strength steel, although it may be economical when long roof or floor spans and heavy floor loads are involved. Towers, however, are sometimes made of high-strength steel to save weight and costs, declared Mr. Ball.

John A. Gilligan, senior technologist, Applied Research Laboratory, U. S. Steel Corp., told the conference that a number of high-strength low-alloy steels have been developed by the steel industry to meet modern demands for a strong yet ductile, moderately priced steel. Moreover, these steels have welding and forming qualities like those of structural carbon steel, plus superior resistance to corrosion.

The earthmoving and heavy construction equipment manufacturers, Mr. Gilligan said, have found that high-strength steels in their equipment mean more payload and greater ability to withstand shock and impact loadings.

In large bridges, high-strength steels give greater strength without increasing the weight; reduce weight without reducing strength; result in greater durability; and in some places, reduce the in-place costs, said Mr. Gilligan.

Informal discussions centered on a number of problems facing structural steel designers and fabricators. They included: welding, high-strength bolting, draftsman procurement and training, and advances in plastic design of steel structures.

• **Bolting**—High-strength bolting received more attention than any other subject discussed at the conference. According to William H. Munse, research professor, University of Illinois, who chairmanned a discussion session on bolting: "Although riveting is recognized as more economical than high-strength bolting in shop fabrication, often high-strength bolting is used in the shop to speed up the work. It also makes it possible to use fitting-up areas for the fabrication.

"Stripping of nuts on high-strength bolts during stressing continues to be a bothersome problem to fabricators and erectors. Contributing factors, which should be avoided, include improper materials in the bolts or nuts, and improper torquing methods by inexperienced workmen."

• **Welding methods**—In discussing the controversial question of manual versus automatic welding, the consensus was that the latter method would generally be more economical where there is considerable duplication. "On the other hand, manual welding permits better control over final dimensions of an assembly," said Carl L. Kreidler, chief structural engineer, Lehigh Structural Steel Co.

One headache for fabricators of welded building assemblies is radiographic inspection of welds. The chief trouble is that building codes don't define radiograph interpretation standards. Consequently, the group went on record as being definitely opposed to making radiographic inspection a requirement for welding for buildings.

• **Draftsman training**—Most of the member companies of AISC have one problem in common. That's the procurement and training of steel detailers. E. F. Owen, executive vice president, Paxton & Vierling Steel Co., voiced some of the comments:

"Most companies recognize the increasing importance of getting more draftsmen. Each company employs different methods of procurement and training to fit its needs. But they generally agree that the program of creating interest in this work should start at the high-school level."

• **Plastic design**—A progress report on plastic design during the past year was made by Edward R. Estes, Jr. AISC research engineer. Considerable attention was centered on this subject at last year's National Engineering Conference (ENR April 12, 1956, p. 24). "The increased usage of plastic design during the past year has been gratifying," he said.

A rough, preliminary draft of "Rules of Practice for Plastic Design" has been prepared and is being submitted to members of AISC for comment and discussion. And within the year, it is expected that a final draft of a manual of plastic design will be ready for approval and adoption by the institute.

When Can You Get Steel?

Shipments will almost equal orders this year, AISC spokesmen predict.

A cross section of running interviews with fabricators attending the AISC conference indicated that **the industry as a whole is in a position to give faster deliveries** than this time last year

Delivery schedules vary widely but some fabricators are promising delivery of structural shapes and plates in the relatively short time of three to four months. A few, however, said they were unable to quote firm delivery dates of less than one year from receipt of order.

Another encouraging trend as told ENR by spokesmen for the AISC is that **shipments are more nearly keeping pace with bookings** of new orders than they have during the past year.

During April of this year new orders for fabricated steel totaled 360,000 tons; shipments came to 314,000 tons. Increased **shipments since the first of this year have decreased the industry's backlog** of orders. At present it is about 3.4 million tons. Forecasts for 1957, according to AISC spokesmen, are for total bookings of 4,050,000 tons and total shipments of 3,800,000 tons. By comparison, bookings last year totaled 4.0 million tons and shipments totaled 3.2 million tons.

Prestressers' Agenda

Program for world conference includes experts from abroad

Details of the technical program for the July 29 to August 2 World Conference on Prestressed Concrete to be held in San Francisco have been announced by conference coordinator Prof. T. Y. Lin, University of California. Nearly 1,000 are expected to attend the 5 day meeting, including representatives from about 40 nations, some of them iron-curtain countries.

The program covers the entire field of prestressed concrete. Sessions will be devoted to materials and techniques; bridges and buildings; design, construction and fabrication in various countries; research; and pavements, wharves, piles and dams. Prominent in the long list of foreign speakers and their subjects are Fritz Leonhardt of Germany, who will discuss continuous bridges; Prof. S. Ban of Japan, who will speak on buildings in earthquake areas; Prof. A. M. Haas of the Netherlands, who will talk about prestressed shells; Jean Muller of France, who will describe an Algerian prestressed dam, and Prof. V. V. Michailov of U.S.S.R., who will discuss automation in production. Of course, the sessions include many U. S. engineers who will cover the important work in this country.

Response to the invitation to participate was so great that several dozen papers not on the program will be preprinted and made available to those who attend. They will also be published in the conference proceedings.

The conference was originated by the Prestressed Concrete Institute. It is officially sponsored by the University of California, with 11 technical societies and organizations as co-sponsors. Further information is available from University Extension, University of California, Berkeley 4, Calif. For those unable to attend, proceedings may be ordered in advance for $10 (U.S. currency) from World Conference on Prestressed Concrete, Inc., 417 Market St., Room 216, San Francisco 5, Calif.

Air Conditioning Trend Has Reversal in Canada

The Canadian government seems to be having second thoughts about air conditioning in its current office-building program.

The new 12 story Motherwell office building in Regina and the projected $10 million Mackenzie Building in Toronto, largest and costliest office building ever built by the government, depend almost entirely on air circulation systems.

The trend away from sealed windows and forced circulation of conditioned air is not for reasons of economy. Evidence has been presented before a House of Commons committee blaming air conditioning systems in earlier installations for increases in asthma and sinus trouble among civil service personnel.

It was stated that air conditioning systems become faulty in government buildings because extra partitions erected to serve special and often changing departmental needs alter the air flows as originally planned by conditioning engineers.

No. 1 Fire Traps?

Nursing homes are unsafe NFPA manager charges

Speaking before the National Fire Protection Association's 61st annual convention in Los Angeles on May 21, Chester I. Babcock, manager of the NFPA fire record department, stated, "Their record of slaughter by fire places nursing homes in the unenviable position of Number 1 in the list of unsafe places to live." During the last 10 years, 283 lives have been lost in the 15 most notable nursing home fires.

Mr. Babcock said local and state authorities have not provided adequate fire safety regulations for nursing homes. Limitation of combustible material, proper exit facilities, segregation of hazards within the home and automatic fire protection are among the major safety factors he listed as needed for nursing homes.

Mr. Babcock said records show there never has been a fatality in a completely sprinklered nursing home.

• **Building designers' responsibility**—Horatio Bond, chief engineer of the NFPA, called upon architects, engineers and others concerned with building design to assume a larger share in fighting the peril of fire to the nation's buildings.

He said solution of many fire problems involving size and shape of buildings, heat, smoke and gas hazards, and the use of automatic sprinkler systems must be done on the drawing board.

Pointing out that over 4,000 persons are killed each year in one and two-family house fires, Richard E. Stevens, an NFPA engineer, listed the use of highly combustible interior wall and ceiling materials, small windows with sills 5 ft or more from the floor, elimination of doors and increasing use of wood-shingle roofs as just a few of modern building techniques that are not firesafe and are not being corrected.

Multistory Garage Also a Drive-in Bank

Banking by auto can be done on three floors of the building of the Texas Bank & Trust Co. of Dallas. And there are also three levels for public parking.

Patrons who have business with a teller drive in on the street floor of the reinforced concrete building, where there are five drive-through teller islands. Those visiting the trust department or executive offices drive up a ramp and park. And users of the safe-deposit vault drive down a ramp to parking space in the basement.

All motor traffic into and out of the bank is one-way. Cars are returned to the street heading in their original direction.

Design of the structure was by the Bank Building and Equipment Co., St. Louis, and George E. Christensen, Dallas architect. R. F. Ball Construction Co. was the general contractor.

Denver Tries Sewage Flotation

Denver is converting its East Side 1 mgd sewage disposal plant to a flotation process in a $50,000 experiment that may lead to an eventual $9 million saving in the city's main 50 mgd works.

According to Richard Batterton, Director of Public Works, the flotation process is being installed in lieu of secondary treatment equipment required at the plant.

The decision followed a series of successful laboratory and pilot plant tests by Denver Equipment Co. and the city's former Public Works Manager, Thomas P. Campbell, conducted under a contract with the city signed in September 1956. The company reported that the flotation process proved satisfactory on a $15,000 gpd pilot operation.

If the experiments at the East Side plant prove successful, flotation equipment can be installed at Denver's main disposal plant for about $1.5 million.

Denver is under State Health Department order to reduce BOD and solids content of effluent from its existing primary treatment plants. Its engineers have estimated that the addition of standard secondary treatment equipment at the two plants or construction of a new third plant would cost $7 to $9 million more than would flotation equipment.

Long used by the mining industry, the flotation process utilizes tiny air bubbles to lift solids to the surface where they are skimmed off. Mr. Campbell has told the city that separation of its sewage solids in this manner is much more effective than normal sedimentation. He said that solids are aerated and oxidized, speeding the decomposition of putrifiable materials.

After separation, Denver's sludge will be digested in the usual manner, then dried and disposed of as fertilizer.

Ohio's Pollution Fight

Industry, control board make clean-up headway

Ohio industry and the Ohio Water Pollution Control Board continue to be a highly productive team as they further the state's rigorous clean-stream program. It is the industries themselves, however, who are providing the big news in the state's water pollution control battle, notes WPCB's Engineer-Secretary G. A. Hall.

Although a vast majority of the more than 13,000 Ohio industries discharge wastes into municipal sewers, and are therefore not directly responsible to the board, an increasing number of those are pre-treating their waste before it enters the municipal system.

And of the 641 industries that are accountable to WPCB, 316 have "currently acceptable" programs in force. Fifty-four obtained approval of facilities in 1956. Further, of the remaining 325 firms with systems not yet approved, 166 have installed some waste treatment, 57 have started construction of facilities, 67 are working on plans, 30 have authorized preliminary studies.

Research also is pushed. Seven of the state's major steel companies continue to cooperate in a study to cope with spent pickle liquor. The firms have pooled funds and have had built a $500,000 pilot treatment plant, which is proving to be effective (ENR Sept. 20, 1956, p. 25). The steel companies are also engaged in taste and odor control research of phenolic wastes.

On WPCB's side, a pilot plant is being used to study the problem of handling industrial wastes in municipal sewage treatment plants. It also has put under study control of acid mine wastes pollution. Ohio State University is involved in both projects.

In all, a state water pollution control act with teeth and cooperating industries have resulted in five years of giant steps toward the state's goal of clean streams.

State Water Agency Would Seek Federal Financing

A bill has been introduced in the North Carolina legislature which would authorize the State Department of Conservation and Development to make recommendations for specific projects "to create an effective system of flood control, to establish inland ports and harbors, to prevent shore erosion and to dredge small inlets to make the state's navigable waters of greater benefit to its citizens."

The department would be required to work with members of the state's Congressional delegation in an effort to obtain funds to "initiate, plan and execute a long-range program," and to make various studies and surveys.

Superstructure Goes on "Croquet Wicket" Piers

Looking like so many croquet wickets, piers on the west approaches of the Connecticut Turnpike's Quinnipiac River crossing at New Haven are shown (left) before any superstructure work was done. In photo at right, the same piers are roofed by the ribbons of steel that will support the deck slab.

Formwork for the slabs has begun on the east-bound roadway (center in picture at left) adjacent to the 6 story factory building. The right fork of the road is for New Haven traffic, while the center lane heads for New York.

C. W. Blakeslee of New Haven built the substructure and is doing the deck, while the Bethlehem Steel Co. has the steel work. Designed by D. B. Steinman, the 4,000 ft structure is part of the 129 mi, $398 million pike which is scheduled for opening December, 1957 and will carry traffic from the Rhode Island line to the New York State border at Greenwich.

Bids Asked for Building 140 ft Radio Telescope

Associated Universities, Inc., under contract with the National Science Foundation for the establishment of a radio astronomy observatory at Green Bank, W. Va., intends to invite bid proposals for the construction of a 140 ft diameter radio telescope.

The telescope, of heavy construction, will incorporate about 235 tons of aluminum, 1,000 tons of steel, 365 cu yd of concrete above the foundation and almost 3,000 cu yd of concrete in the foundation.

As a precision research instrument, the parabolic surface of the telescope's reflector is to be held to a tolerance of ¼ in. or less. The polar axis will be mounted on oil-pad bearings. The polar and declination axes at the top end of the yoke must be aligned to permit relative angular measurements in the sky with a precision approaching 10 sec of arc.

Companies interested in the construction of the telescope should contact Richard M. Emberson, Associated Universities, Inc., 10 Columbus Circle, New York 19, N. Y.

Fire Losses Are Expected To Reach $1 Billion Mark

The National Board of Fire Underwriters, meeting in New York City, reported estimated fire damage in the United States reached a peak of $989 million in 1956, and that 1957 is expected to be the first billion-dollar-loss year.

The greatest fire hazards, the report stated, exist in communities of 10,000 to 25,000 population. Except for manufacturing fires, which were most prevalent in cities with populations over 1 million, these cities reported more fires from every cause.

According to statistics in a 10 year report for the NBFU, the three main causes—accounting for about 51% of all claims—are misuse of electricity, matches or smoking and lightning.

Niagara Power Moves Closer to Senate Vote

The Senate Public Works Committee was slated to meet this week to approve a compromise bill that would permit the Power Authority of the State of New York to construct its planned $600 million power project at Niagara Falls.

The compromise hammered out last week by a subcommittee headed by Sen. Robert Kerr, did not please those who had introduced the Niagara legislation, but all sides have indicated that they can live with the compromise bill.

The compromise is on the preference clause issue, providing that one-half of the output of the new plant, or about 1 million kw, will be earmarked for preference customers. Another thorny issue was sidestepped by Senator Kerr's committee in trying to spell out the "economic transmission distance" within which preference customers would be protected on their power claims. The public power group was advocating 300 miles as the distance, in order to make sure that preference customers outside New York State were provided for. The New York delegation, along with the New York Power Authority, favored setting the "economic transmission distance" at 150 miles.

The subcommittee bill leaves it up to the Federal Power Commission to define "economic transmission distance."

Chicago Bridge Split for Repairs

To do a $900,000 repair job on Chicago's Michigan Avenue Bridge over the Chicago River with a minimum of traffic disruption, city engineers resorted to a clever but simple trick—they cut the bridge in half along its longitudinal axis.

The west half of the 37-year-old double-deck bascule is kept open to traffic while the east half is being worked on. Later, the procedure will be reversed, and on completion of the job, the two sections again will become one.

Although the reconstruction method is unusual, it does not require any spectacular engineering since provisions for operating either half independently of the other were included in the original design of the structure.

The diaphragms connecting the two interior lines of trusses at each panel point were removed by knocking out the rivets holding them to brackets on the trusses. A steel median strip between the two roadway decks was removed and a temporary guard rail was erected on the deck of the west half.

In normal operation a pair of motors at each abutment raise and lower both halves of each leaf together by working through a common differential. The differential is connected to separate shafts which in turn connect with the gear boxes and trains driving the trunnions. Because each half of the opposing leaves has its own counterweight, it is no problem to lock one or more shafts in any desired position and still be able to operate the other leaves.

Another Gleaming Facade for New York . . .

New York City's midtown skyline, already aglitter with a number of new metal-faced skyscrapers, is now acquiring another bright edifice. More than eight acres of aluminum wall and window panels are being installed on a 38 story office building under construction at 666 Fifth Ave.

The bright exterior, described by Tishman Realty & Construction Co., Inc., owner-builder of the project, as the world's largest aluminum curtain wall, adds another distinction to a structure that has already attracted notice as one of the tallest bolted-frame buildings (ENR Jan. 17, p. 40).

The facade contains 2,950 panels, weighing upwards of 800,000 lb. Fabricated by Reynolds Metals Co. in Louisville, Ky., they are being shipped to New York via the truck-rail piggyback method, 16 panels to a trailer. The job comprises 185 trailer loads.

Typical panel and window units are about 7½ ft wide and 11 ft high and weigh 225 lb each. They are fabricated with a die-pressed design of small square-base pyramids. Mullion facings will be 20 in. vertical bands of white porcelain-enameled aluminum between 3 in. vertical bands of polished aluminum.

Panels are placed from within the building and then bolted to steel framing members. The panels interlock along the horizontal joints.

F. H. Sparks Co., Inc., is erecting the panels under subcontract to Tishman. Carson & Lundin, architects, designed the building. Victor Mayper is the consulting structural engineer. All are New York City firms.

. . . And a Colorful Front in Miami Beach

Blue-green porcelain-enameled steel encloses the new 15 story Miami Beach Federal Savings & Loan Association Building, tallest in the Florida city.

The colorful exterior, made up of 16 ga sheets, comprises the outer faces of 2 in. curtain-wall sandwich panels. Interior sheets are 18 ga steel sheets, treated to prevent rust and finished with baked enamel. Lightweight concrete and glass fiber, 1 in. of each, fill the core space.

The concrete, anchored to the inside surface of the porcelain-enameled sheet, gains a one-hour fire rating for the panels. It also stiffens the steel sheet, limiting deflection to ⅛ in. under a load of 45 psf.

Mullion covers and horizontal tie strips between covers are stainless ste Columns are faced with black granit

The building was designed by Edw T. Reeder Associates, Miami arc tects, and built by Arkin Constructi Co., Inc., also of Miami. Panels we manufactured by the Truscon Steel D vision of Republic Steel Corp.

Interstate Bridges Boosted Over Their Early Problem

Two major new highway bridges in Oregon and Arkansas—came clos to actual construction last week as va ous legal maneuvers were being push to clear the way for work.

In Oregon, Gov. Robert Holm signed a bill appropriating $100,000 f preliminary planning for a bridge t span the Columbia River at Aston near its mouth. The Washington leg lature made a similar appropriatio and the survey would be a joint proje of the two state highway department

The proposed structure and a proaches would be 4.3 miles long wi construction costs in excess of $33 mi lion. A feasibility study on the brid was made in 1955 by Tudor Enginee ing Corp. of San Francisco.

Meanwhile, in Arkansas, the Sta Highway Commission plans, possib next month, to advertise for bids construction of a proposed Mississip River bridge at Helena. The comm sion feels that this is the best way determine the cost of the structure a how it could be financed.

The project, initially proposed 1939 as a joint Arkansas-Mississippi ve ture with federal aid, has run in several obstacles, greater of which is $3.5 million cost estimate increase.

Navy Plans Sea Tower For Experimental Work

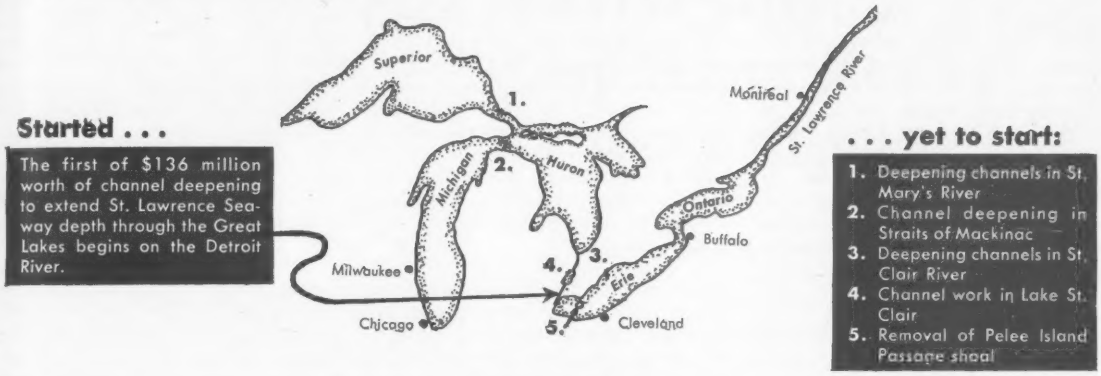
A 75 ft tower, designed to carry platform clear of waves up to 35 high is being planned by the Navy, a cording to an announcement issued r cently.

The tower is to be built about a mi off shore near San Diego for use as base for oceanographic experiments the Navy's electronic laboratory.

Captain Ralph MacDonald, assistan public works officer for the 11th Nav District, said that the tower will b used to house experiments that cann be carried on successfully aboard shi —such as developing techniques appl ing to the detection of underwat targets.

No date has been set for the sta of construction, and cost estimat must await completion of designs. design contract is held by the enginee ing firm of Moffatt and Nichol, Long Beach.

Great Lakes Dredging:



Lake Links Start Getting Seaway Depth

Extension of the St. Lawrence Seaway through the various connecting channels of the four western Great Lakes got off with a bang last week (see below) as a ceremonious blast officially began the necessary deepening work in the Detroit River near Amherstburg, Ont.

Depending upon the rate at which funds are made available by Congress, construction will be scheduled so that the full project depth of 27 ft minimum from Lake Erie to Lake Superior is made available by June 1962, according to Brig. Gen. P. D. Berrigan, North Central Division Egineer, Corps of Engineers.

In addition to current dredging, the big dredging program includes additional dredging in the Detroit River; in Lake St. Clair and the St. Clair River between Lake Erie and Lake Huron; in the St. Mary's River and Straits of Mackinac between Lake Huron and Lake Superior.

The 5 year, $136 million channel deepening program will require the mobilization of an unprecedented, large fleet of heavy dredging equipment to move the 44 million cu yd of material. Army Engineer estimates are that to complete the job on time will require the full output of eight large dipper dredges, two large hydraulic dredges, and at least one sea-going hopper dredge.

In general, each dipper dredge will need to be attended by one or two large tugs, a derrickboat, one or two launches and from two to four of the larger sized dump scows.

In channels with rock bottoms, dredging must be preceded by submarine drilling and blasting operations involving the use of special drillboats. The working force necessary to man and supervise the dredge fleet will require from 800 to 1,000 men, according to Army Engineer estimates.

Deepening the connecting channels of the Great Lakes is designed to accommodate ocean-going vessels using the St. Lawrence Seaway and Welland Canal. One phase of the over-all program already under way is the $200 million Calumet-Sag channel enlargement to serve the vast industrial complex in the South Chicago area. This also facilitates the rapidly expanding exchange of commerce between Lake ports and the Mississippi-Ohio-Missouri River navigation system.

Many of the port cities of the Great Lakes are anticipating a tremendous increase in waterborne commercial traffic upon the completion of the connecting channels, the St. Lawrence Seaway and the Calumet-Sag Projects. The Port of Chicago is engaged in a $100 million program to develop Lake Calumet Harbor at the lakeward end of the Calumet-Sag project.

The Port of Milwaukee is also improving its harbor facilities in anticipation of rapid growth in Great Lakes commerce plus new overseas traffic by way of the St. Lawrence River. New terminal facilities will be constructed on the North Harbor Tract at an estimated cost of $910,000 and on the South Harbor Tract at a cost of $5.5 million. Vehicular access to the harbor area is also being improved at a cost of about $2.0 million.

. . . With Ceremonial Blast Near Detroit

Groundbreaking ceremonies held last week on Bob-Lo Island in the Detroit River, marked the official start of construction of the Corps of Engineers' $136 million program of deepening the connecting channels of the Great Lakes system to extend them to the 27 ft St. Lawrence depth.

Preliminary work on the first two contracts in the 44 million cu yd dredging project (ENR July 26, 1956, p. 26) got under way last month. Both contracts are for deepening the Amherstburg Channel of the Detroit River, about 15 miles downstream from Detroit, from its present depth of 21 ft to a minimum of 27.5 ft navigation depth.

One contract, totaling $6.6 million is held by the Great Lakes Dredge and Dock Co., Cleveland. The other, totaling $16.3 million is held by Marine Operators, Minneapolis; a joint venture of Al Johnson Construction Co., Peter Kiewit Sons' Co., Cunningham, Kiewit Co., and Morrison-Knudsen Co.

States Set Right-of-Way Rules

Coming to grips with the serious problem of acquiring right-of-way for highways, three states took three different tacks on the matter last week.

Possibly most drastic was action of the Wyoming Supreme Court, which ordered, in effect, that agencies seeking to obtain land or right-of-way by eminent domain must make a more concerted—and probably more expensive—effort to give notice to land owners.

The court held that newspaper publication of notice of intent to seize property by eminent domain is not sufficient in cases where the address of the land owner or lessee is "known or can be ascertained."

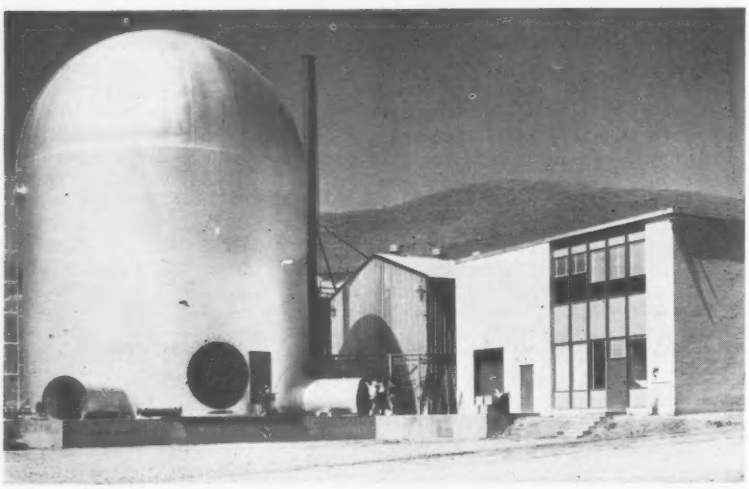
"The ruling will place some burden on public officials to make reasonable efforts to give notice rather than merely placing publication in a newspaper and leaving the entire burden of checking to the interested person," the court said, in reversing a District Court decision.

The land owner, E. M. Stringer and E. G. Markley, had appealed a condemnation in which construction of a highway between the towns of Basin and Greybull brought the right-of-way within 2 in. of an oil well on property leased to them. They said that without knowing of the right-of-way change, they had placed equipment on the highway right-of-way, and maintained that they were not notified of the loss of property through eminent domain proceedings.

In North Carolina, the House of Representatives passed and sent to the Senate a bill to spell out procedure for acquiring rights-of-way for controlled access highways. House members commented that the authority of the federal government and the state to acquire such property and control access already is clear, but the legislation was necessary to provide "necessary and orderly procedure." The state's right to acquire property and control access has recently been upheld by the State Supreme Court.

Taking an entirely different turn, the Pennsylvania State Highway Department instituted a new plan to lighten the financial burden on owners whose homes have been condemned for highway projects. Under the plan, partial payments up to 75% of the appraisal value of the condemned homes will be made, prior to final payment. Advance payment is expected to help property owners acquire suitable housing pending final settlement of claims against the state. Under the former system, owners were not paid any amount until final settlement of the claim was made, resulting in frequent refusal to vacate their homes and legal battles, and occasionally force evictions.

Considering a different, but related, matter, the New York Board of Trade called on Governor Averell Harriman to lead a campaign to ban all advertising signs on new state highways that are to be constructed with federal aid. Pledging the complete support of the board to "prevent the despoliation of the natural beauties of our state," Robert W. Dowling, president of the board, also suggested to the governor the enactment of legislation to regulate all highway advertising displays. Regulatory billboard legislation may be included in the governor's call for a special session of the legislature.



GE Atom Lab to Feed PG&E Power

General Electric Co. late last month dedicated the nation's largest privately financed laboratory for peacetime development of atomic power. Located near Livermore, Calif., about 40 miles from San Francisco, the Vallecitos Atomic Laboratory will be the headquarters for GE research in nuclear power, and as such is expected to have a decided impact on design of upcoming multi-million-dollar atomic power plants.

One of the major elements of the $10 million installation is a developmental boiling water power reactor that is contained in a 100 ft high steel vessel (left in photo). This unit will be used to test new designs and features of boiling water reactors. Later this year, it will furnish steam for generation of the first privately financed atomic electric power in the U. S.

Steam will be supplied to a 5,000 kw turbine generator (center building) being built at the site by Pacific Gas & Electric Co. The power will be fed into the regular PG & E transmission system for distribution to homes, offices and industries in northern California. Control building for the installation is shown at the far right.

Erie, Pa., Picks Site for New Lake Port Development

The Erie, Pa., Port Commission has selected a site on the east end of the bay for development of minimal dock facilities that will be needed for deep-draught shipping in Erie Harbor by April of 1959. At that time, the St. Lawrence Seaway is expected to convert this inland port into a seaport.

Port officials estimated that the cost of the project, including an access road might be about $2.2 million. The new facility would consist of a wharf about 600 ft. in length, with a transit shed, open storage area and railroad sidings.

C. Robert Austin, chairman of the Port Commission, was directed to canvass engineering firms who prepare drawings and specifications for bidding.

Missouri Basin Program Needs for Fiscal 1959

Estimated requirements for the Missouri Basin development program in fiscal 1959 were recently placed at $306.6 million by the Missouri Basin Inter-Agency Committee. This figure is $118 million more than the $188.3 million for such work contained in the President's budget for fiscal 1958.

The $306.6 million would include $200,000 for the start of construction on Big Bend Dam below Pierre, S. D. The biggest chunk listed is $55 million for Oahe Dam.

This Bucyrus-Erie 1½-yd. 38-B shovel loads rock at the base of Mt. Franklin in El Paso, Tex. It is owned by Standard Aggregates Co., El Paso.

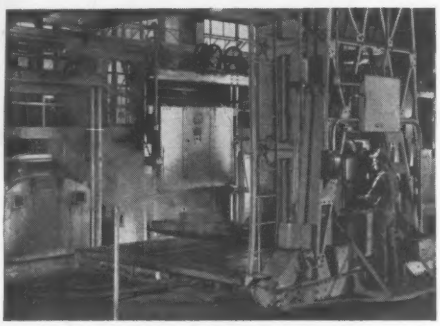
Bucyrus-Eries Keep Things Moving on Major Highway Jobs

On highway projects in state after state Bucyrus-Eries are the backbone of the machinery fleet. When the going gets rough, when machine maintenance becomes a problem, Bucyrus-Eries furnish the necessary dependability to keep things moving at a steady clip.

Many of their steel parts, for instance, are cast in Bucyrus-Erie's own foundries under rigid quality control; this accounts for the ruggedness that minimizes maintenance time. Fewer working parts combined through superior design enable Bucyrus-Eries to deliver highest output week in and week out.

These moneymakers are available in a complete line of crawler-mounted models from ⅜ to 4 cubic yards (including the new 1-yd. 30-B) and in rubber tired carrier mounted Transit Cranes in 15-, 25-, and 35-ton capacity. Models through 4 cu. yds. are readily convertible to crane, clamshell, and dragline, plus dragshovel on machines through 2½ cu. yds. For lighter crane work, there are 5-ton and 10-ton capacity Hydrocranes.

Your Bucyrus-Erie distributor will be glad to give you information on the size machine that fits your requirements. See him today. 333E57

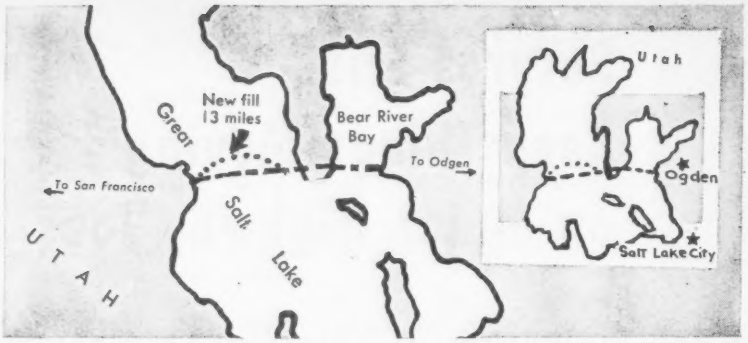


Bonus Quality Many gears, pinions, driving tumblers, shaftings, and other parts that go into Bucyrus-Eries are heat-treated in electric furnaces for specified degrees of toughness and hardness. The steel castings are poured in Bucyrus-Erie's own furnaces so they can be held to highest standards at every stage of development.

BUCYRUS ERIE South Milwaukee Wisconsin

In construction of the Boston Southeast Expressway, this Bucyrus-Erie 3-yd. 71-B shovel loads trucks with granite, rock and dirt. Marinucci Bros. & Co., Inc., Boston, is the owner of this machine.

P. T. & L. Construction Co., Paramus, N.J., used this Bucyrus-Erie 2-yd. 51-B shovel to cut down high ground for fill to be used for the Garden State Parkway in New Jersey.



Southern Pacific is spending $49 million to replace its Salt Lake trestle with a 13 mile rock and gravel fill. Construction operations center on a fleet of barges that hauls rock developed by huge blasts and sand and gravel handled by a high speed conveyor belt system.

How Barges Are Building A Railroad Fi

In one of the most truly remarkable construction jobs under way today Southern Pacific is replacing its 13 mile timber trestle across the northern end of the Great Salt Lakes with a rock and gravel fill. The $49 million job requires 31,500,000 cu yd of material, making it the biggest railroad construction operation in the U.S. in recent years.

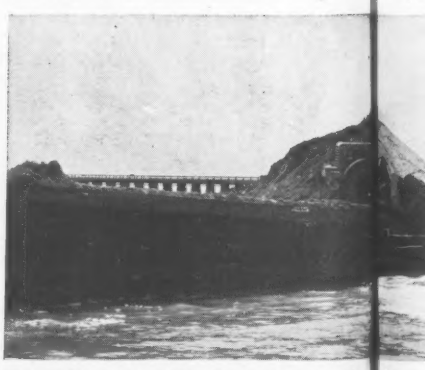
Highlights of the operation are:

- A fleet of barges that carry 2,000 cu yd of material per trip.
- A high speed conveyor belt system that carries sand and gravel nearly two miles from borrow area to wharf.
- Development of quarry rock by some of the largest blasting operations on record.

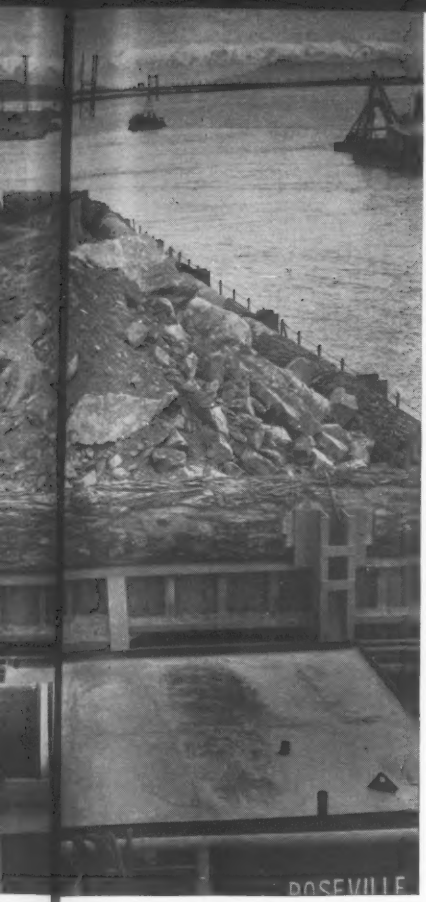
Design of the fill is also of considerable interest. Much of the alignment is underlain by deep lake bottom muds that are predominately clay. And because the shear strength at the mud surface is practically zero, floating the fill on the mud or filling while displacing the mud was considered impractical. So a 25 ft depth of soft material is dredged out to provide better fill support. About one third of the fill is placed on a thick layer of salt after dredging out an overlying mud layer.

Nine alternate schemes were thoroughly considered by the Southern Pacific and its engineering consultant–International Engineering Co., Inc., of San Francisco. These included replac-

TRUCK DUMPS rock into hopper bottom barge. Most fill on this big earthmoving job is handled by these 2,000 cu yd units that take 120 truck loads.



TRACTOR UNLOADS flattop barges. Fill n 000 cu the surface is handled by a number of th too sh



Fi Over Salt Lake

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ing in kind the existing trestle in various stages, several fill schemes as well as use of a reinforced concrete trestle. Most feasible proved to be construction of a 38 ft wide single track rockfill on an earth and gravel blanket. The new alignment is 1,500 ft north of the existing trestle and includes a 9,000 ft siding at mid-fill.

The original conception of the work was a broad based fill laid on top of the lake bottom materials. But, after more detailed analysis, it was found that the top muds had practically zero shear value. A broad based fill probably could have been built on this material but not without use of an extremely wide section to compensate for the weight of the central portion of the fill. By dredging 25 ft into the lake bottom muds an increase in shear value to about 0.2 tons per sq ft was achieved. And additional resistance to lateral displacement—the critical failure of the section —is obtained.

The load of the central part of the fill is resisted by the passive earth pressure of the underlying undisturbed material plus shear values along the interface between the bottom of the fill and the original material—this is why the dredging was undertaken.

Southern Pacific has had the advice of top experts in the soil mechanics field in designing the fill. Even so, test sections are being constructed to the point of failure as a check on design. The thinking is that a slight reduction in fill width would save hundreds of thousands of cubic yards of rock and gravel.

Properties of the underlying material were determined by samples taken in advance of construction at about 2,000 ft intervals. The samples were taken by a new type sampler called the Swedish Foil sampler which recovers a $2\frac{3}{8}$ in. dia undisturbed section for a 35 to 50 ft depth in 8 ft lengths. These samples were subjected to triaxial shear tests, unconfined pressure tests and consolidation tests. Long term consolidation tests are still under way on some. These tests will extend the curve developed by the original tests to better evaluate the time required for consolidation of the fill.

About two thirds of the fill is based on lake bottom clays. About one third is on top of a thick layer of salt—a clear crystalline material known as Glaubers Salt ($Na_2SO_4 \cdot 10H_2O$). Where the salt layer is thin it is ignored and the clay strength is used in design. But where the salt layer is in excess of 5 ft, its strength is used to help support the fill and a much smaller fill section is needed. The salt layer is analyzed as a slab; resistance assigned to it is the breaking strength of the slab.

• **Trestle built in 1902**—Construction of the trestle in 1902 and 1903 was also a remarkable achievement. Some 38,000 friction piles up to 140 ft long were driven by a crew of 3,000 men using 19 pile driving rigs. Built at a cost of $1,728,000, the trestle saved 42 miles of route and considerable grade. The original alignment around the north end of the lake, dating from 1869, included the site of the driving of the golden spike marking completion of the first transcontinental railroad.

But Southern Pacific officials were faced with the consideration that the estimated service life of the piling of 75 years would mean replacement of the trestle in the not-too-distant future. Even more pressing was the necessity to replace the superstructure which was figured at about 30 years service life and had last been replaced in the period from 1920 to 1927.

A big disadvantage of the trestle is a "slow order" that limits speed to 30 mph for streamliners and 20 mph for heavier freight trains. Purpose is to limit the dynamic effect on the relatively limber timber structure. And the main transcontinental route of the Southern Pacific is entirely dependent on the trestle since the route around the north end of the lake was abandoned and the rails removed in 1942 at the request of the War Production Board. Thus during any time the trestle is closed to traffic, trains must be routed over trackage belonging to other railroads—a costly, time consuming operation.

Finally, there is the threat of fire to the trestle. Due to preservative effect of the salt water of the lake, many officials considerd the trestle to be safely fire-resistant. This, however, was

000 cu yd units when depth of the water too shallow for hopper barges.

TRAIN HAULS rock for west end of job. Fill is brought up to finish elevation by such work trains at west end and trucks at east end.

. . . Great Salt Lake fill: 1,000 cu yd per lineal ft at its widest point

DREDGE EXCAVATES 25 ft deep trench in soft lake bottom muds to provide better base for fill that will be dropped in place at a later time. Nearly 50,000 cu yd of mud a day can be excavated by two dredges on job.

proved to be an erroneous conclusion when, in mid-1956, a 645 ft section of the trestle superstructure was burned. Heroic efforts on the part of contractors and Southern Pacific crews put the trestle back in service in only 7 days (ENR June 7, 1956, p 67). However, the incident served to justify the decision to build the fill.

A $45 million contract for construction of the fill was awarded to Morrison-Knudsen Co., Inc. in March, 1956. The remainder of the $49 million expenditure will be performed by the railroad, including ballast, ties, rails, centralized traffic control and signalization. Capital for the project has been secured through Southern Pacific's normal financing procedures with an assist from an Office of Defense Mobilization fast write-off certification.

• **Fill section**—The fill is being constructed to El 4217 (ballast and rails will bring rail elevation to El 4220). This provides substantial freeboard above the water surface, which averages El 4202. Variation in water surface has been minor—only a matter of 11 ft in the history of the railroad from a low of El 4197 to a high of El 4208. (Records show a high of El 4215.9 in 1868).

Rock is used in the central part of the fill since its greater angle of internal friction provides increased strength. The outer portions are sand and gravel, which provide weight to counterbalance the bulk of the central fill. Although the width of the central rock core is ample to provide the necessary strength, sand and gravel is substituted as much as possible because it is cheaper and easier to place. The rock is placed on a blanket of at least 10 ft of sand and gravel, which protects soft clays from rock penetration.

Width of the fill varies with supporting material—for deep lake bottom muds as much as 400 ft while for a thick salt layer base less than 200 ft is sufficient. Depth of fill also varies, but is generally about 70 to 75 ft in the central rock portion. Thickness of the sand and gravel shoulders is tapered. Near the extreme edge it is just equal to the depth of the cohensionless clays removed by dredging.

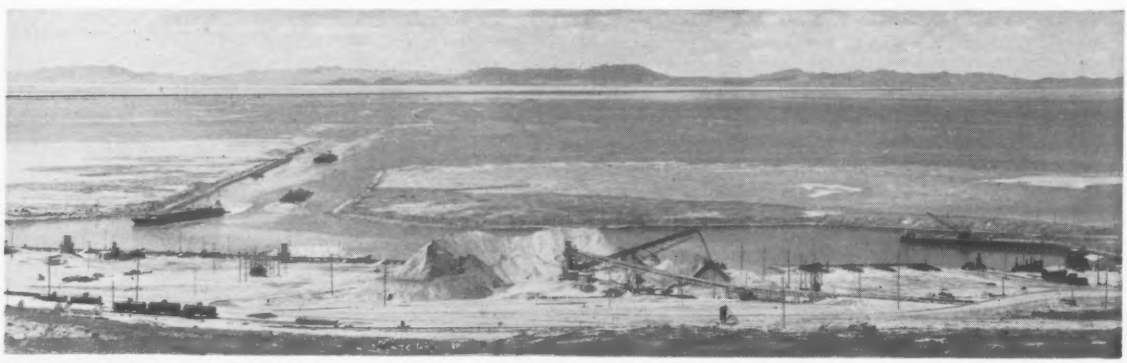
Volume of fill at the widest section is in excess of 1,000 cu yd per lineal ft including rock core, riprap and sand and gravel blanket and shoulders. Where salt layer support justifies a reduced section, fill volume is less than 500 cy yd per lineal ft.

Penetrating the fill will be two box culverts to permit passage of small boats. Located at about the third points, the culvert opening will be 5 ft wider than space between trestle bents. As the top part of the embankment is rock, permeability will be high. Calculations have shown that flow through the fill will be great enough to handle the most unfavorable conditions, with no differences in lake level on the two sides.

• **Construction decisions**—The first and perhaps most important construction decision to be made was to place most of the fill by barge haul. This has many advantages over truck or rail haul. Barges can range over the entire 400 ft fill width, can haul to areas where fill is needed first, and the 2,000 cu yd hopper barges used can haul as much in one trip as a 100 car work train.

To accommodate barge operations a harbor was built near the east end of the fill where the sand and gravel deposits are located. In constructing the harbor, a dock was built first (Ben C. Gerwick, Inc., of San Francisco subcontracted for the dock construction). Then a turning basin and 3 mile long channel were dredged out.

(*Continued on page 38*)



BARGE HARBOR serves the Salt Lake navy. Docks were built first then the turning basin and channel was dredged. Radial stacker in the center foreground is the terminus of the two mile long sand and gravel conveyor system.

THE TOWN AND COUNTRY PLAZA SHOPPING CENTER, Pensacola, Fla., used 1,825 tons of structural steel, including 448 tons of AmBridge Steel Joists —all fabricated and erected by American Bridge.

AMBRIDGE STEEL JOISTS

save time and money at Pensacola Shopping Center

THE TOWN AND COUNTRY PLAZA SHOPPING CENTER, Pensacola, Florida, is a fine example of the way AmBridge Steel Joists can work for both architect and builder. Available in two types—Standard and Long Span— AmBridge Steel Joists are so versatile they can be used to support any type of modern roof, ceiling, or floor . . . giving architects unusual latitude in design. Here, in the Plaza, they hold aloft cantilever balconies and canopies with rigid safety, add eye-appeal to the finished buildings, and protect shoppers from Florida sun and rain.

Builders know that time saved is money saved. Strong, light, easy-to-handle AmBridge Steel Joists are installed quickly, cut the time required to put your building under cover. When used for floor construction they allow other inside trades to begin work sooner. To simplify your outfitting tasks, the modern underslung, open-web design of AmBridge Steel Joists permits unobstructed passage of pipes, ducts and conduits in any direction, affords maximum head room for ceilings.

And AmBridge Steel Joists are modern right down to the way they are fabricated and resistance welded. Production line output gives you better, more uniform stock, in quicker time for delivery. AmBridge Steel Joists can help you save time and cut costs on your next project. Get in touch with our nearest contracting office . . . NOW . . . for detailed information.

Shopping Center Developer: B. THORPE & CO., PITTSBURGH, PA.
General Contractor: BAKEWELL CONSTRUCTION CO., PITTSBURGH, PA.
Architects: BRANDON SMITH, PITTSBURGH, PA., F. T. EDSON, PENSACOLA, FLA.
Designing Engineer: J. W. LAUFFER, PITTSBURGH, PA.

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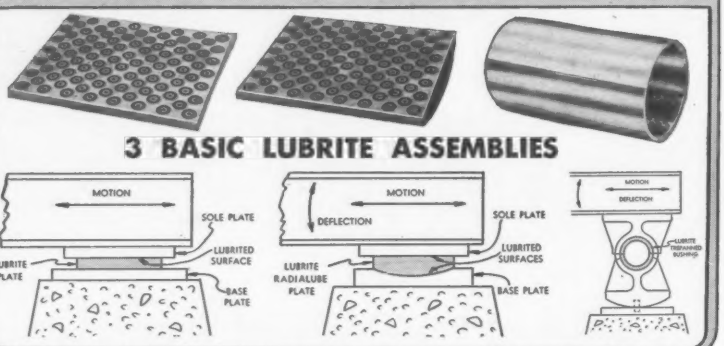

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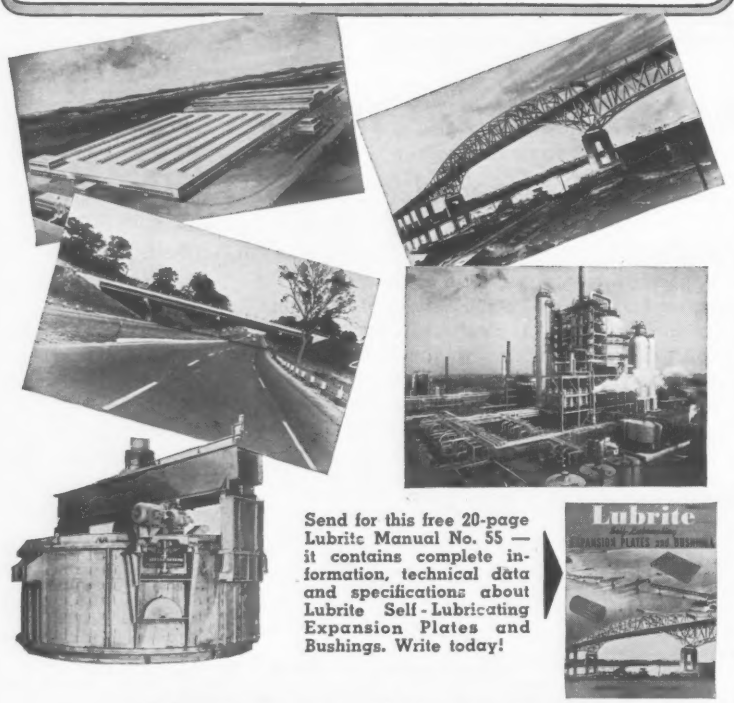

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. . . Great Salt Lake Fill

Rock quarries are available at both ends of the fill. For the west end rock is being hauled by work train as well as by barge. For the east end trucks are being used for the above water portions and barges for the underwater fill.

The middle one third of the 13 mile fill is based on the thick salt layer and is not subject to the necessity of long-term consolidation of underlying materials. Thus, first construction emphasis is on the ends of the job.

• **Salt Lake Navy**—The fleet which is carrying out the fill work includes two suction dredges, six hopper barges, five flat top barges, six 1,000 hp tugs, three 300 hp tugs and miscellaneous survey, man haul and service boats.

Most important fleet units are the hopper bottom barges. These have seven compartments, with each compartment having a set of hydraulically operated gates. The barges measure 55 ft by 250 ft of which the central hopper portion occupies a 35 x 175 ft area. The outer portion of the barges are flotation tanks. Heavy timbers around the edge of the hopper compartment protect the deck from damage from falling rock. When fully loaded, the barge decks are nearly awash, and draft is about 11 ft. The hopper barges were fabricated by Kaiser Steel and assembled on the job by Chicago Bridge & Iron Co.

The controls for the hopper gates can be operated from the deck of the barge or from the cabin of the tug that is pushing the barge. Each hopper can be operated individually or, by activating all the controls, the entire barge load can be dumped at one time.

Loading the hopper barges with sand and gravel is a simple conveyor belt operation. With good material a barge can be loaded in as little as 15 minutes, although the presence of clay in the sand and gravel can slow the operation to as much as an hour.

Loading the barges with rock is a slower operation. End dump trucks discharge from an elevated platform directly into the hoppers. However, to prevent damage to the hopper gates, a blanket of rock is first carefully placed on the gates by skips handled by derricks. Trucks discharge directly into the skips, which in turn are lowered by one of two derricks into the barge. Each barge takes about 120 truck loads of rock.

Barge operations are on a 10 hour, two shift basis, six days a week, and sometimes on Sunday to keep up to schedule, after lost time from rough weather, which is experienced about 15% of the time. Barge haul to the west end of the fill requires about a five

D9's and D8's show peak production on Olin Mathieson's $95-million Ohio plant!

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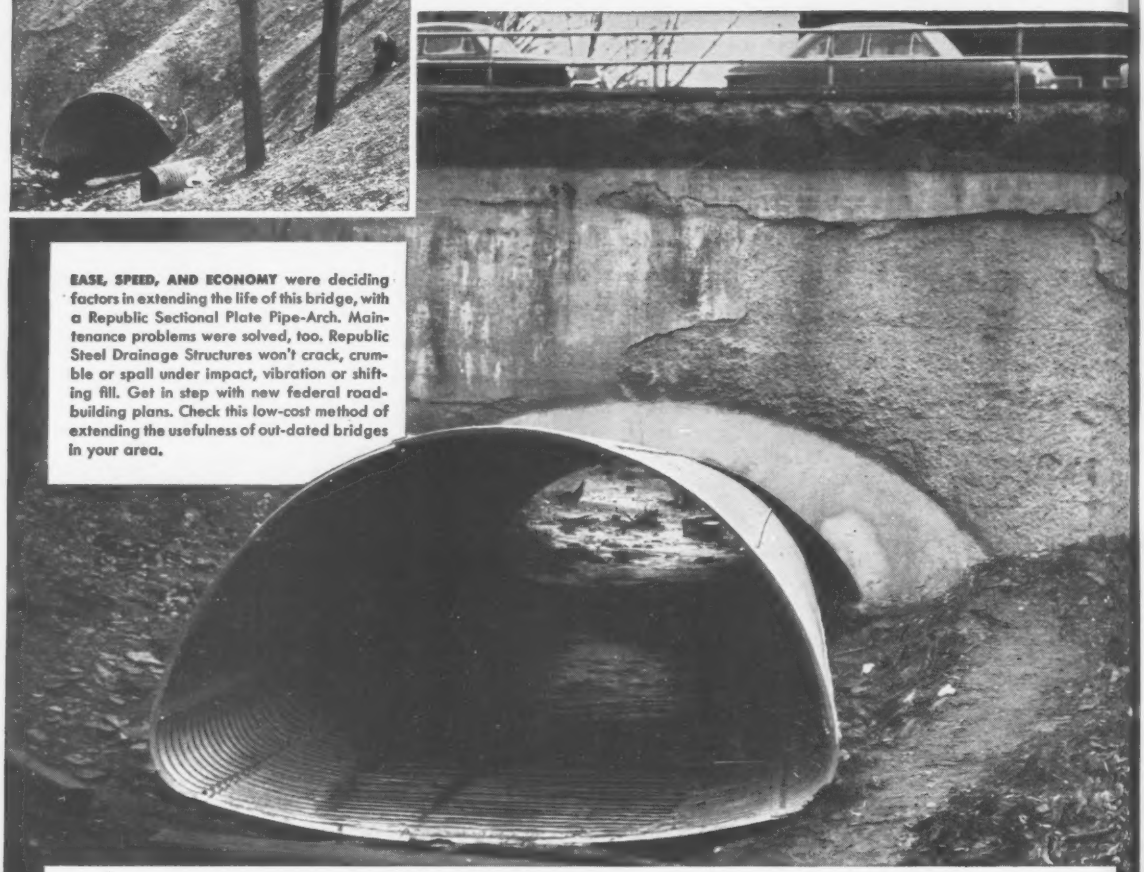

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Finally, pave width required to handle traffic volume. The result will be a dependable, up-to-date bridge—at far less than new-bridge cost.

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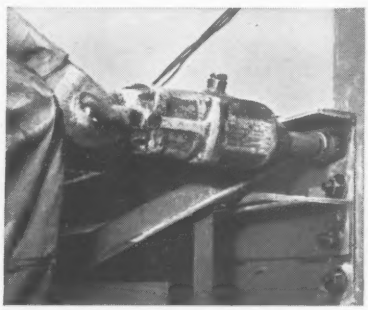

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TRUCKS are loaded with sand and gravel by 8 cu yd electric shovel.

LOADING BRIDGE takes material from bottom dump truck for belt feeding. Bridge includes vibrating screen, jaw crusher and accelerating belt feeder.

hour round trip, so that one barge can make two round trips per shift. Haul time to the east end is much shorter, each barge being able to make four or five round trips per shift.

Position of the barges when dumping material is extremely important. One reason is that it is necessary to build up an even blanket of the sand and gravel material on the underlying mud. And as the rock material is more expensive than the sand and gravel material, care is taken to dump rock only where it is needed. Helping tug operator and field engineer line up dumping position are targets set up along side and at each end of about 1,000 ft of fill. In addition small 300 hp tugs help guide the barges into dumping position.

Transverse profiles of the underwater fill are taken at several stations daily—sometimes even after each barge load—by means of an automatic recording fathometer operated from a small power boat. Further fill work is based on these profiles.

Due to the draft of the hopper bottom barges, fill can only be brought up to about 11 ft below water surface. For the remainder, to just above water level, smaller flattop barges are used. These barges—fabricated by Hammond Iron Works—can handle about 1,000 cu yd, and are unloaded by means of tractors (both crawler-mounted and rubber-tired models have been used), which simply shove the material over the side.

Tugs for the hopper barges mount twin diesel engines with 1,000 hp combined power output. Tugs for pushing the flattop barges are 600 hp.

The tugs were manufactured by Gunderson Bros. Engineering Corp. of Portland, Ore. They were assembled in Portland in two halves and welded together at the jobsite. To counteract electrolysis, special cathodic protection using a sacrificial magnesium anode is mounted on all units of the Salt Lake Navy.

Even before fill material can be placed, a depth of about 25 ft of soft lake bottom mud is dredged out. This removes the weaker uncompressed materials that in some places are almost entirely composed of feces of brine shrimp.

The two dredges on the job for this purpose—one normally operates at the west end and the other at the east end—usually operate about 2,000 ft ahead of fill work and remove about 40,000 cu yd in a 24 hr day. The dredging cannot, however, be too far ahead of the fill since there is some chance that storm conditions will move material back into the trench.

The fill will be brought up to final elevation by both truck and rail haul. Trucks operate out of a rock quarry at the eastern end of the fill and will handle about 8 mi. of the work. At the western end train haul is being used to bring the fill up from 10 ft below water surface to final elevation. Fill on soft layers is scheduled to be left in place about 24 months before bringing up to final grade to permit underlying materials to consolidate as much as possible.

Using the combination of barges, trucks and train haul, M-K has placed as much as 60,000 cu yd in the fill in one day. An average day might be about 50,000 cu yd. The aim is to place 1.2 million cubic yards a month.

• **High speed conveyor belt**—Besides the barge operation, the other notable equipment complex on the project is a high speed conveyor system for sand and gravel—about ⅔ of all fill material. The $1.8 million belt installation travels at an 850 fpm speed—about twice normal—in order to reach a rating of 4200 tons per hour. To minimize belt damage, the belt is fed by accelerating feeders that operate at 500 fpm. In operation since the first of the year, the belt system has handled as much as 33,000 cu yd in one day (two 8 hr shifts).

Decision to use a conveyor in place of trucks for the 2 mi haul was made after careful analysis by Morrison-Knudsen and Southern Pacific engineers. M-K retained the Conveyor Co. of Los Angeles to prepare plans and specifications for a belt system. These were put out to competitive bids with alternate proposals accepted. Low bidder coming in with its own scheme was Hewitt-Robins of Stamford, Conn. system for 30 million tons of material or for 26 months operation.

The belt has two main sections, one 4,275 ft long and another 3,383 ft long. A transfer station with an accelerating feeder is located at the intersection of the two sections.

One feature of the main belt is regenerative braking. The 300 hp synchronous drive motors are so arranged as to generate electricity from gravity effect of the loaded belt in motor.

Sand and gravel is excavated with-

TRANSFER POINT includes accelerating belt that feeds rock and gravel at 500 fpm to main belt traveling at 850 fpm.

RADIAL STACKER forms 70 ft high pile of sand and gravel on 164 ft radius. Material is stockpiled for barge loading.

out blasting in a pit-type operation by a team of three electric shovels with 8 cu yd buckets. Pit face is a maximum of 35 ft high and the material breaks with only the effort of the shovel bucket.

The material is hauled from the shovels by eleven 29 yd bottom dump trucks. The trucks dump their loads onto transfer bridges, each equipped with heavy-duty, vibrating-screen scalpers to remove material in excess of 8 in. which might damage the belt or penetrate the base clays when dumped into the fill. The scalped material is used after crushing.

Two truck dumping bridges were installed in parallel for initial operation. A third is being installed some 500 yd away. Each bridge is complete with scalper and feeding hopper except that only two jaw crushers have been provided.

When the third bridge is in operation one of the two original units will be moved to a new location even farther into the pit. Purpose is to limit haul from shovels to dumping bridge to a maximum of about 500 yd. And the transfer points will be hopscotched over each other from time to time as work progresses, with each move adding to the total conveyor system length.

The belt feeds a radial stacker that piles the material up to 70 ft deep in a 164 ft radius. The main conveyor and the radial stacker are equipped with 54 in. belts.

From the storage pile, a pair of 72 in. wide conveyors load the material onto barges. Each conveyor originates in a tunnel underneath the stockpile that has 10 loading points. In normal operations three loading points feed each belt.

TRACTOR FEEDS conveyor tunnel that charges 72 in. wide barge loading belt. Tractor is needed only when material tends to stick.

Drive motors for the conveyor system have proved to be slightly under powered. The 250 hp motor provided on the main belt has been replaced by a 300 hp drive. And the two 125 hp motors on the stacker belt are being replaced by 150 hp drive units.

• **Big blasts develop rock**—Rock for fill work is developed by huge blasts that provide as much as 1,000,000 cu yd of material in a single shot. The blasts have involved more than 900,000 lb of powder at one time packed into coyote hole tunnels drilled into the quarry face. The explosive used consists of about one part of 60% powder and four parts of slow burning powder.

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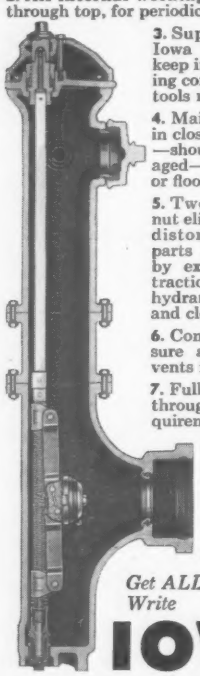

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4. Main valve holds tight in closed position so that—should hydrant be damaged—no loss of water, or flooding, will occur.

5. Two-piece operating nut eliminates binding or distortion of working parts (sometimes caused by expansion and contraction) — makes Iowa hydrants easy to open and close at all times.

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. . . Great Salt Lake fill: A big blasting job too

QUARRY BLAST using nearly 1 million lb of powder produces almost 1 million cu yd of rock. Tunnels are filled with powder for blast.

There are two primary rock quarries, one at the east end of the job in quartzite and the other at the west end in limestone. The coyote holes for the east side quarry branch from main adits spaced 1300 ft apart. Both adits and branch tunnels are 5 ft wide and 7 ft high. The branch tunnels are at right angles and are drilled to within about 40 ft of each other. These tunnels are filled with pockets of powder about 20 ft long with sand filled between pockets. And the 100 ft of tunnel nearest the main adits is backfilled with sand to protect the main adits.

First two branch tunnels were 75 ft apart. Next branch tunnel was 85 ft further in. And the remaining branch tunnels will be 100 ft in. Two such tunnels are blasted in one shot.

At the west end of the job, different coyote hole techniques are used because the limestone breaks more easily than the quartzite. In one blast in the west end quarry, seven T-shaped coyote holes were drilled into the face. The main adits went in 90 ft and branched 30 ft in each direction. These holes were loaded with 560,000 lb of powder in a manner similar to that already described. This amount of powder produced a million cubic yards of rock.

Tunnels are drilled at the east end quarry by jumbo mounted drills. At the west end quarry jack leg drills are used.

• **Target estimate contract**—The Morrison-Knudsen contract is a target estimate type, which provides incentives as well as penalties for the contractor. Should the job be constructed for less than the estimate agreed on by S.P. and M-K, the contractor will participate in a percentage of the savings. Penalty for overrun is the same percentage as the bonus, with a maximum limit to the penalty.

Almost all the equipment on the job, although purchased by Morrison-Knudsen, is actually owned by Southern Pacific. This reduces the financing burden on the contractor.

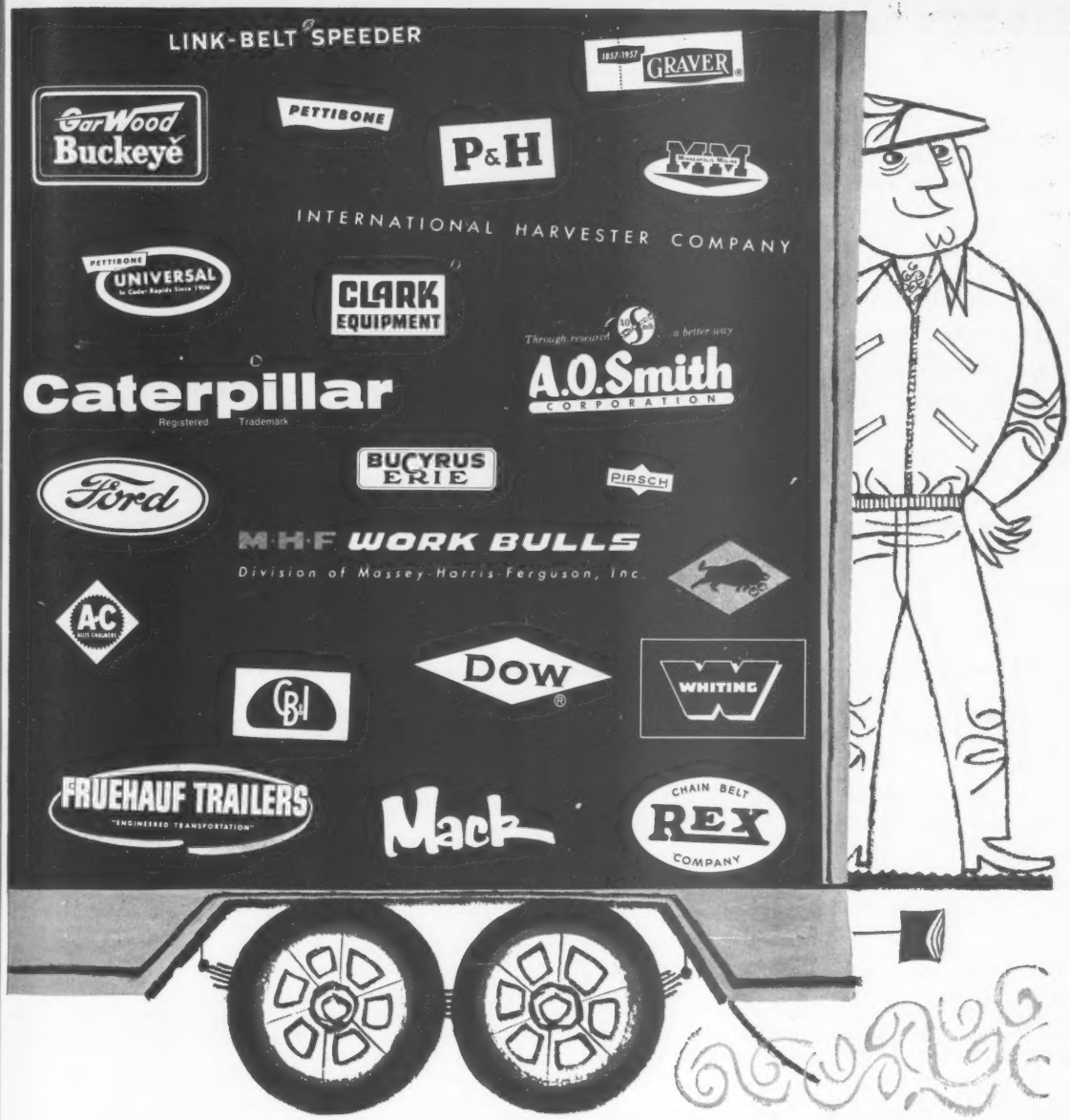
A construction town has been built at the east end of the job with housing mostly in trailers for 2,000 people. And although the east end of the job is only 30 rail miles from Ogden, access by road is a difficult 85 miles of driving—much of it over dirt road. A few workers commute by private airplane.

Planning the Salt Lake fill started several years ago under the direction of E. E. Mayo, former chief engineer for Southern Pacific. The work is being carried on under the direction of W. M. Jaekle, who became chief engineer when Mayo retired in 1955. Representing Southern Pacific on the job as division construction engineer is H. J. Willard.

Design has been handled by International Engineering Co. of San Francisco under the direction of Toralf Mundal, chief engineer. International Engineering also is supervising the construction and its resident engineer on the job is Norman Rands.

Morrison-Knudsen operations are headed by O'Dean Anderson as project manager.

Southern Pacific and International Engineering were assisted by a group of consultants including Dr. Arthur Casagrande, Dr. F. H. Kellog, Robert R. Philippe and Stanley D. Wilson.



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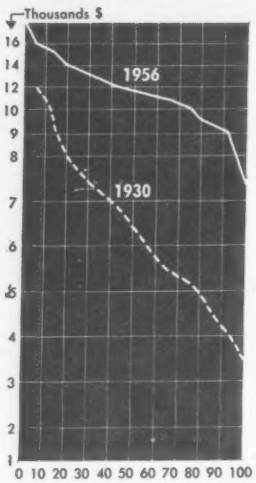
1956 Salaries Compared With Engineer Earnings in 1930–

There has been a jump for all employee groups

Groups A through D are based on state highway department classifications. Pay is plotted against percent receiving that much, or more.

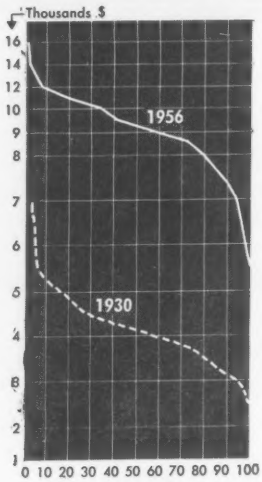
Chief Engineers



A

The Chief Engineer group showed about a $4,500 per year gain (median) since 1930.

Senior Engineers



B

Senior Engineers have seen a sizable increase, but less than their assistants.

How Engineers' Salaries Have Change

Arthur Richards
Consulting Engineer
Larchmont, N. Y.

During the past months there have been many reports stating that the white-collar group of employees has lagged behind union workers in terms of economic gains.

It is claimed that wages of production workers have trebled since 1930, but salaries of engineers, even with ten years of experience, have not yet doubled.

It is said that the main reason for the alleged plight of the engineers is the fact that so few of them belong to organized labor unions.

However, in spite of the fact that the increase of compensation for engineers is predicated upon education, specific experience, ability and competency, versus the seniority rating of union workers, the engineering profession has not been remiss in providing adequate economic gains for its members.

Charted above are results of a brief study of the salaries paid to about 12,000 engineers in 1930 and to about 20,000 engineers in the employ of the 48 state highway departments in 1956.

To simplify the data on these highway employees, who are classified under more than twenty civil service titles, they are graded into four groups. Most highway engineers aware of their relative position and compensation will know to which group they belong: A–Chief Engineer, B–Senior Engineer, C–Assistant Engineer, D–Junior Engineer.

Group A. Consists of about 0.7 of 1% of state highway engineers, in the titles: Chief, assistant chief, deputy chief.

Group B. About 8.3% of the total: Division, district, secondary-roads, bridge, design, construction, maintenance, testing.

Group C. About 21% of total: Office, right-of-way, survey-planning, landscape, traffic, equipment.

Group D. About 70% of total: Resident, instrument, draftsman, survey, inspection.

Tabulated opposite are the indexes of compensation received by the engineers for the years 1930 and 1956. The basic data came from a 1930 report by the writer who was then a member of the committee on salaries of the American Society of Civil Engineers, and from the 1956 report on State Highway Engineers Salaries by the American Road Builders Association.

The percentiles are interpreted as follows: The 210 salary index for 1956 applies to 90% of engineers in group A; 50% have a 1956 index figure of 181; and the top 10% on the pay scale have only 142 as their index–meaning but a 42% increase in pay since 1930 for the highest paid percentile.

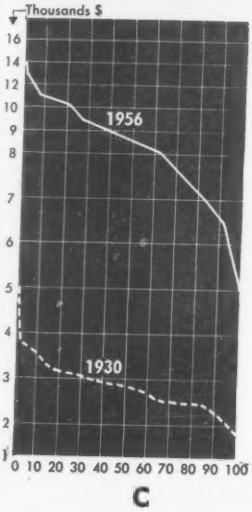
It will be noted that in only this one level (the upper 10% of chief engineers) is the index value below the cost of living index.

It is quite evident from the table that this group of engineers as a whole, without recourse to subsidies, strikes, sabotage or regimentation, have maintained their relatively high economic standard.

The second table at the right shows that the increase in compensation for engineers in the employ of state highway departments has more than kept pace with the other increases indicated in the table. The source of data on costs and wages was the Dec. 6, 1956, issue of ENGINEERING NEWS-RECORD. The weighted average of the engineers shows they secured a higher ratio increase in actual salaries received, than the members of the building trade unions received in terms of hourly wage rates, which are much higher than the actual wages received.

• **Why engineers appear relatively well off**–Credit for the present favorable economic status of the members of the engineering profession belongs, in my estimation, mainly to the national engineering societies for their effective as-

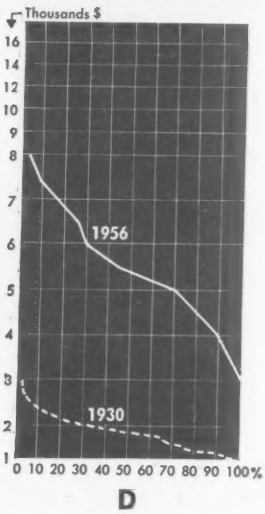
Assistant Engineers



C

This group saw the biggest gain: Median went from under $3,000 to over $8,000.

Junior Engineers



D

Junior Engineers' median (the 50% figure) went from under $2,000 to about $5,500.

ge—And Why

sistance in advocating adequate pay for services rendered in all grades of engineering, and by their opposition to all attempts of the labor unions to organize the engineers under the control of the national labor organizations.

In 1915 the American Association of Engineers was formed "To promote the social and economic welfare of the engineer, to stimulate public service in the engineering profession and to encourage and develop the efficiency of the engineer." It later prepared the first comprehensive study and report on the general classification and compensation of engineering positions in public service throughout the country. The report was quite effective in furthering higher and more equitable salaries.

About 1930 the American Society of Civil Engineers, became very active in making studies and reports on salaries of civil engineers and published a minimum salary schedule for each position classification, with regional factors to apply to various sections of the country.

As indicated in the charted and tabulated wage and salary indexes, the engineering societies have been more effective in securing increased compensation than the labor unions.

• **Salary spread**—Once upon a time the chief engineers and others in the higher brackets deemed it imperative, probably to bolster their self-esteem and pride, that their compensation be held at much higher levels than those of the next lower groups. Because of this the group B and C engineers did not receive comparable pay for the relative value or grade of work performed.

The third table below shows salary schedules have been favorably adjusted since 1930. The table is based upon the middle 60% of the engineers covered in the chart. The 1930 Chief Engineer, for example, received 55% more salary than the Senior Engineer, while in 1956 he received only 25% more. Also, the Senior in 1930 received 48% more than the Assistant, while in 1956 he got only 9% more. This modification became effective, I believe, because the engineering societies impressed upon the higher engineers that if they themselves expected to secure increased compensation, they first would have to recommend higher pay schedules for lower groups.

The figures indicate that the B and C groups of engineers, which comprise about 30% of the total, between 1930 and 1956 made proportionally greater advances than the lower of the upper group. The Group A engineers, however, during this period also secured their increased compensation, as in 1956 they received 1.82 times as much as in 1930, whereas the cost of living advanced only about 1.62 times.

The Group D or Junior Engineers doubled their pay with a median of about $5,590 for the 14,000 employees estimated in the group; those in Group C more than tripled their salaries; and those in Group B secured more than twice as much. While at present the newly graduated engineers seem to be receiving extremely high beginning salaries it is not evident from their table that the present qualified engineers with five to ten years of experience in highway engineering are being subjected to adverse discrimination.

• **Conclusion**—It is quite obvious to me from the data herein shown, that engineers are thoroughly competent to manage themselves in matters pertaining to their own economic welfare. In fact, so far as known, no professional engineering society has ever doubted that the engineer himself is the best master of his own destiny.

Indexes Measure Change

Salary Index for 1956 (1930 = 100)

	A. Chief Engineer	B. Senior Engineer	C. Assistant	D. Junior
90%.....	210	233	281	286
50%.....	181	225	300	284
10%.....	142	223	306	308

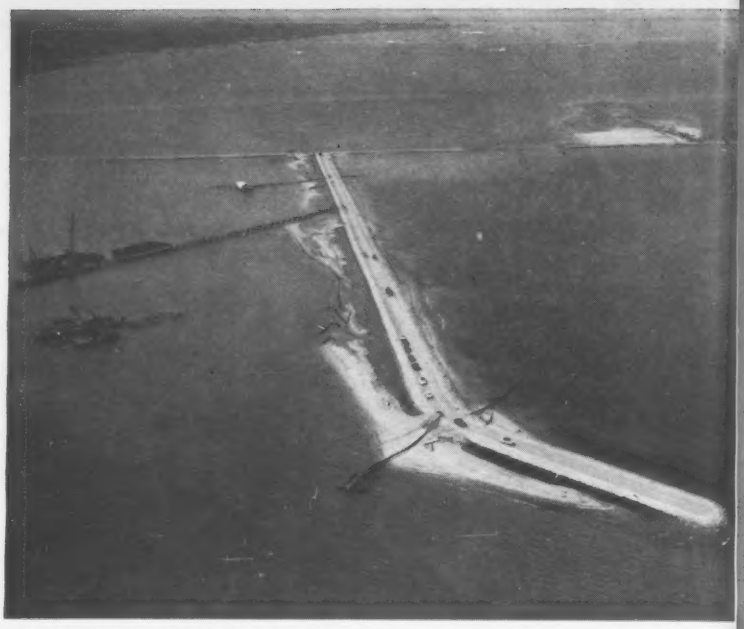
1956 Salary Index (1930 = 100)

For these empolyee groups				Compared to these indexes			
				Heavy Construction Costs	Highway Construction Costs	Building Trades Union Wages	Cost of Living Index
A	B	C	D				
178	227	296	293	347	193	244	162

Salary spread, and how it has changed—

1930.....	Group A made 55% more than . . .	Group B which made 48% more than . . .	Group C which made 52% more than . . .	Group D
1956.....	Group A made 25% more than . . .	Group B which made 9% more than . . .	Group C which made 55% more than . . .	Group D

DREDGE CUTS OUT of levee. it helped place to enclose 2,500 acre disposal area.



SPUR LEVEE, at right angles to eastern leg of main levee, protects rehandling basin located at lefthand end of trestle-supported pipeline.

Mud Dump to Take 22 Years to Fill

It will be 22 years and 100 million cu yd from now before dredgers of the Hampton Roads, Va., area will again have to look outside Norfolk Harbor for a place to dispose of their dredged material. For that is the estimated receiving life of the Corps of Engineers' 2,500 acre Craney Island artificial disposal area which will be ready this September.

The $6.5 million muck dump is made up of three 2-mi-long levees and the island shore enclosing a trapezoidal area of shallow water—up to 12 ft deep—which ultimately will be raised to 18 ft above mean low water by the fill (ENR June 17, 1954, p. 26).

The enclosure is located adjacent to the Norfolk Harbor channel and provides a much less expensive method of disposal than barging out to the Atlantic Ocean—which is what faced the Corps when all other natural disposal areas had been exhausted. Average annual charges are estimated at $1.2 million and annual benefits figured at $3.6 million, for a benefit-cost ratio of 2.9 to 1. The benefits are based on elimination of the 5 to 7 hour round trip to ocean dumping grounds—thus saving 76 cents a cu yd for hopper dredging and $1.10 for bucket work. Added income also may realized from payment of a unit toll to be exacted from non-Corps users of the new disposal area.

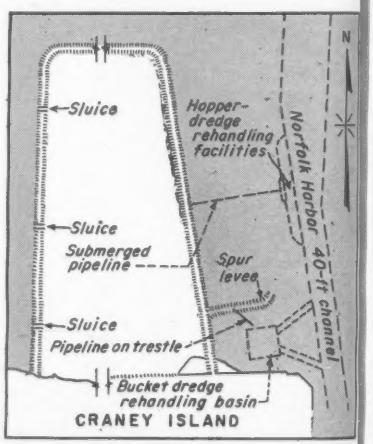
• **Intermediate handling**—The levees are stone-revetted hydraulically pumped sand dikes resting on a layer of clean fine sand blanketing the soft mud foundation to distribute the load over a relatively large area. Dredges placed the levee, working from inside until closure was made. The last dredge then cut its way out, replugging the break it had made.

The enclosed disposal area will be fed from a bucket-dredge rehandling basin, and by hopper dredges discharging into a sump rehandler tied to mooring dolphins during the dredging operations—both are located between the harbor channel and the eastern leg of the levee.

The sump will send its material into the disposal area through a permanently installed submerged pipeline. The rehandling basin, a 1,000 ft square area 40 ft deep, will be cleaned periodically by pumping the material into the main disposal area through a trestle-supported pipeline.

A spur levee at right angles to the eastern levee protects the rehandling basin, and by hopper dredges discharg- the western leg of the main levee will take care of overflow during rehandling operations.

Annual deposit is estimated at about 4½ million cu yd of material. What will be done with the 2,500 acres of government-owned property that will result 22 years from now is still to be decided.



DISPOSAL AREA will be good for 22 years and 100 million cu yd of dredged harbor material.

Construction—which started in 1954—of the main levees, spur levee and rehandling basin has been done by the Norfolk Dredging Co., Norfolk, Va.; Carpenter Construction Co., Norfolk, has the contract for the hopper dredge handling facilities. The project is under the Norfolk District, Corps of Engineers; District Engineer is Col. Oliver J. Pickard.

Polyethylene

NEW WAY TO CUT CONSTRUCTION COSTS

WHEN two suspiciously intellectual-looking strangers stepped into the office of Kansas City contractor Walter Rohrer, they set off a chain of events that gave Rohrer one of the biggest surprises of his twenty years in the business.

The invasion occurred just as Rohrer was preparing to lay the concrete floor slabs for Spencer Chemical Company's* new Research Center. The visitors carried with them an 8-foot-wide roll of film about the size and weight of a sofa pillow.

The invaders, scientists from Spencer, announced cheerfully that they had brought with them an easier and less expensive way to make a tougher floor slab—a way Rohrer could put to use right now on the Spencer building.

When a floor slab is laid, it is customary first to put down a layer of impregnated paper, then to pour the concrete and finally to lay burlap over the top until the concrete is dry. Without this vapor seal "sandwich" arrangement, the concrete often dries too fast and may cause a dusting action on the surface.

What the Spencer scientists were proposing was that—in place of impregnated paper and burlap—Rohrer should use this gossamer-like polyethylene film they had brought him. Made from Spencer's own "Poly-Eth" Polyethylene, the film was no thicker than a piece of paper, and nowhere nearly as heavy.

ROHRER SCOWLED. His paper and burlap had always worked fine. And this featherweight film would obviously be ripped to pieces when concrete came cascading down on it from the concrete buggies.

The Spencer scientists were polite but firm. They were paying for the building. If the film didn't work, it would be their loss alone. Reluctantly, Rohrer agreed to give the "Poly-Eth" a try.

The results astonished him. The frothy-light polyethylene film was far easier to handle. And, unlike impregnated paper, the film needed no gluing together—a tremendous saving in labor costs.

Featherweight film: For a slab sandwich with less bite . . .

The film's toughness surprised Rohrer. And even though the polyethylene lay directly over sharp-edged aggregate, and workmen walked on it again and again before pouring time, the film developed almost none of the punctures so common in impregnated paper. And there was no sign of a rip while the concrete was being poured.

All this meant better control of the drying process, plus a tougher slab of concrete when the job was done—and at no more cost than that of conventional materials.

And the "Poly-Eth" film was so light and easy to handle that the labor time was a small fraction of what it had been.

FILM STAR. In many other ways, too, film made of "Poly-Eth" Polyethylene has helped builders and householders save time and cut costs:

- Laid down over crawl space areas, it protects houses against the ruinous corrosion caused by moisture evaporating from the ground.
- As a membrane between a concrete floor and top flooring, it protects hardwood flooring from the inevitable sweating of the concrete slab in summer.
- In fact, wherever a tough, lightweight, easy-to-handle vapor barrier is needed, polyethylene usually does the job better—and at less cost.

REPORT TO BUILDERS. Spencer Chemical Company, manufacturers of "Poly-Eth" Polyethylene, the raw material from which films like those described above are made, is constantly exploring new uses for this wonder plastic.

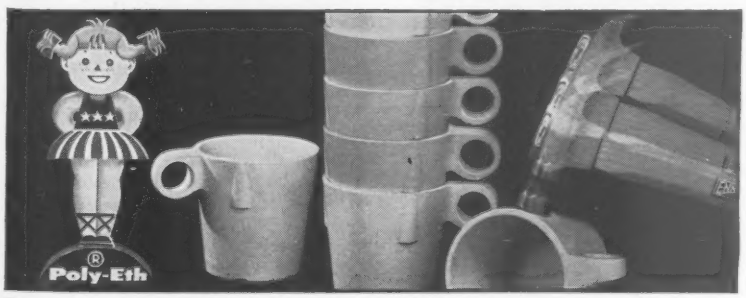
One series of our investigations deals with the many test-proven ways in which polyethylene film can save money, worry, and work for builders and homeowners. Our report (see coupon below) is yours for the asking.

*Manufacturers of "Poly-Eth" Polyethylene. "Poly-Eth" is a registered trademark of Spencer Chemical Company.

SPENCER CHEMICAL COMPANY

"America's Growing Name in Chemicals"

507 Dwight Bldg., Kansas City 5, Mo., Manufacturers of "Poly-Eth" Polyethylene • Ammonia (Commercial and Refrigeration Grade) • Aqua Ammonia • 83% Ammonium Nitrate Solution • Synthetic Methanol • Formaldehyde • Hexamine • SPENSOL (Spencer Nitrogen Solutions) • FREZALL (Spencer Dry Ice) • Liquid CO_2 • Cylinder Ammonia • Nitric Acid.



Even a hammer can't break this new featherweight, stain-resistant coffee mug. It's made by General Plastics, Inc., of Dallas, Texas, from Spencer's exclusive new boil-proof polyethylene, "Poly-Eth Hi-D." Perhaps some of *your* products can be improved with this stiffer, boilable polyethylene. Send coupon for more information.

FACTS FREE

If you'd like to know more about "Poly-Eth" Polyethylene, check the items below in which you are particularly interested. Then mail this coupon to "Poly-Eth," Spencer Chemical Co., 507 Dwight Bldg., Kansas City 5, Mo. We'll send you more information.

- ☐ "New Uses for Polyethylene in Construction"
- ☐ "A Beautiful Lawn At A Twist of Your Wrist"
- ☐ "58 Home Uses for Polyethylene"
- ☐ Polyethylene Coffee Mugs
- ☐ "Poly-Eth Hi-D" Data Sheet

No matter what you're doing, it makes sense to always use the *right* tool for the job. Trying to remove a big lug nut with pliers is about as inefficient as to use the same pliers to pull a cigarette from your pack. It's a case of trying to fit a *round* peg into a *square* hole.

Moving dirt profitably, on schedule, is no different. Using the *right* tool for the job . . . in place of something "second best" . . . often means the difference between winding up your contract in the red, or well in the black.

Here are a few tips on moving a lot of dirt in short order, at lowest-net-cost-per-yard. Tips to help you make sure your job foremen always "fit a square peg in a square hole" — as far as equipment assignments are concerned.

Check these pointers. Make sure you're getting the most from your equipment investment . . . and that you're using the best tool for the job!

10 TIPS...

for more profitable earthmoving

1. Prepare cut and fill areas

Every scraper on your spread will get higher hourly production if you have everything in readiness before you send them out to the project. Preliminary ground-breaking, and preparation of cut and fill areas, can be done most economically by smaller, fast-moving, highly-maneuverable scrapers . . . like the LeTourneau-Westinghouse 9-yd. D Tournapull®. Versatile "D" speeds the pioneering phase by stripping areas for efficient operation of production scrapers. When equipped with dozer blade, it can help clear, and do light dozing work.

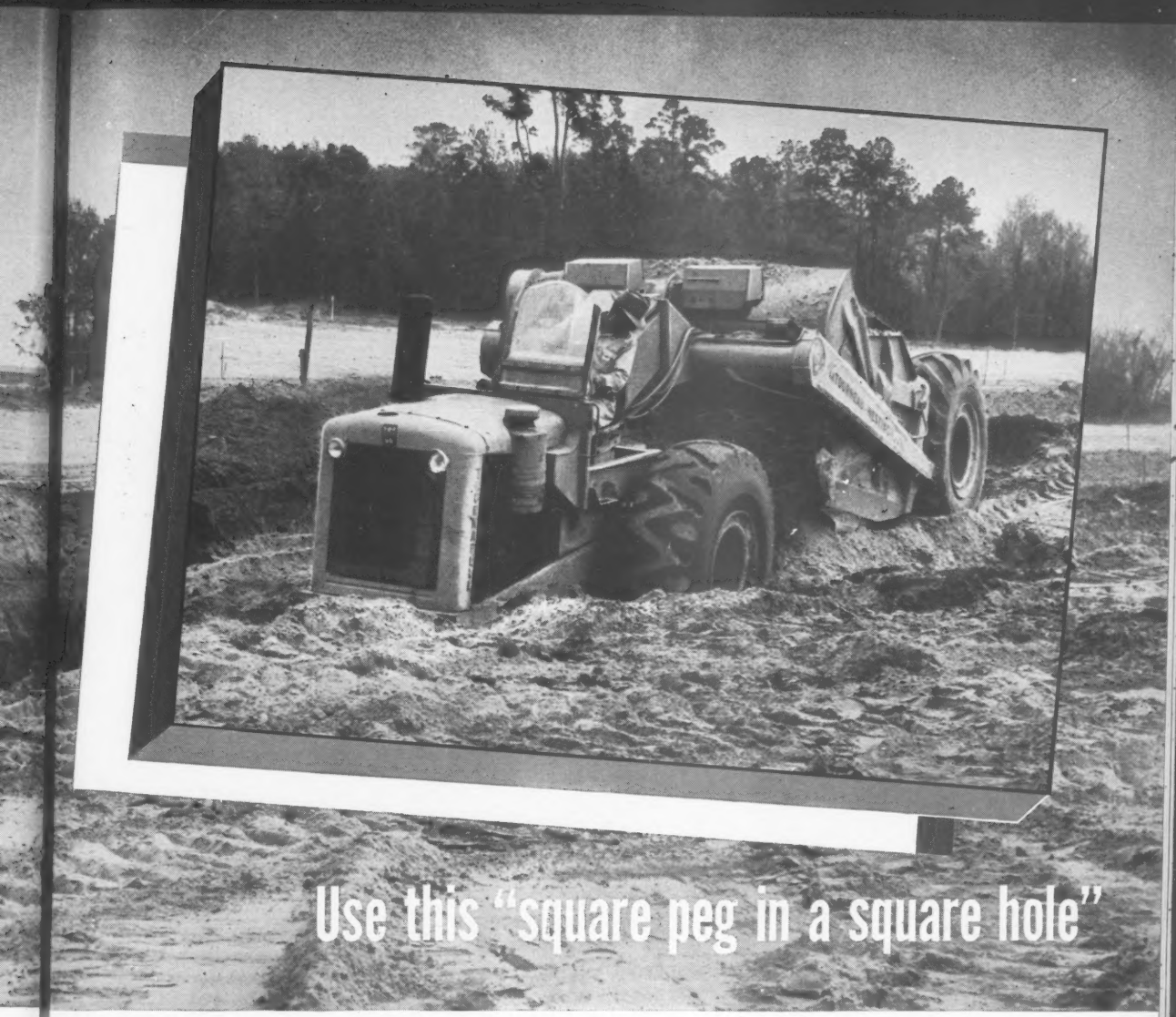
You'll be fitting "a square peg in a square hole" when you assign your speedy, high-production "D" to jobs like this.

2. Shorten haul routes

The shortest distance between your cut and fill is a straight line. If no reasonably direct haul route exists, it may pay you to team your 138 hp "D" with your pioneering tractor to carve out a new one. If extensive cuts or fills are to be made in the area, shorter cycles are important in keeping fleet production high. Every hundred feet that you can chop off your haul route will be reflected in bigger hourly yardages, moved by every scraper in your spread.

Speedy D 'Pull can also help boost fleet production by keeping haulroads smooth. Should ruts or sink-

Copyright 1957 by LeTourneau-Westinghouse Co.



Use this "square peg in a square hole"

holes develop, "D" fills and levels. And on return trip to cut, "D" can drag blade, to maintain route for smooth, fast cycles by all your earthmovers. No other earthmoving tool is so well suited for all these tasks as the electric-control D 'Pull.

3. Avoid adverse grades on cut or haul

Loading or hauling uphill always slashes production. Best bet is to rearrange your cycle . . . or to cut down adverse grades wherever they occur . . . before uphill operations can eat into your profits on the job. Self-loading D 'Pull is ideal for such assignments. Send your "D" wherever needed to cut down grades and level off your cuts and haul routes. "D" has the speed, maneuverability, and capacity to handle such operations at lowest cost.

4. Stockpile topsoil for re-use

Another way to save time and money is to be frugal with your topsoil. Instead of just burying it where ordinary fill would do as well, you'll usually find it pays to stockpile better grade materials for re-use later. D Tournapull easily strips off choice layers . . . stores material nearby, yet out of the way, for future use. Saves having to haul in imported topsoil later, when rough-grading is completed. Stripping and stockpiling can be efficiently handled by 1-man and his self-loading "D".

5. Avoid long turns, back-ups

Whenever your earthmovers have to swing wide on a slow, sweeping turn into the cut or fill, you're losing valuable production time. Where turns are necessary, make them short and tight, for real cycle economy. And make sure your scrapers don't have an awkward, clumsy approach to your pusher, or to your fill — which adds to your cycle time.

— turn page for more on "square peg D"

Square peg in a square hole!

(continued)

How D Tournapull® fills "square hole" assignments for bigger profits

It pays to clear away obstructions, widen work areas, open direct accesses with your fast-loading D 'Pull. "Handyman D" goes right to work on the problem... moves around fast to straighten curves and clean out narrow approaches. Result? Streamlined operations — with faster, shorter production cycles!

6. Divide project for efficiency

Most large projects break down into 2 or 3 localized operations — often of varying size and type. There's little satisfaction in handling 90% of the contract at a sizeable profit, if costs run far above expectations on the remaining 10%. Be sure to pre-plan your yardage. Keep your production fleet on big sections only. Assign all scattered small-yardage portions to fast-moving "hit-and-run" dirtmovers — like this improved D Tournapull.

You'll find that dozens of "nuisance" fringe operations can be handled cheapest by this hard-working 9-yd. L-W scraper. Self-loaded or push-loaded, "D" heaps sizeable payloads fast... hauls on or off-road at speeds to 29.5 mph... and maneuvers easily in narrow, restricted areas. It's the square peg for all such square hole jobs.

7. Avoid scraper congestion, delays, on cut or fill

Often, as your cut or fill deepens, your cycle distances lengthen or shorten. Then you may begin to notice a pile up of scrapers on the cut and fill. Or, your pusher may sit idle much of the time, waiting for the next scraper to appear. Either condition is wasteful. With one or more "D's" in your fleet, it's a simple matter to expand or contract any localized work force. Simply call in, or pull out, a "D" to balance your operation. Either way, all units keep working productively for you without interruption.

advertisement

D 'Pull makes the ideal balancer. Fast and mobile, it is equally at home on long or short cycles . . . as a lone dirtmover or in production operations. Hour after hour, day after day — "Square peg D" moves impressive volumes of any kind of scraper material in minimum time.

8. Keep operations flexible

As your job progresses, work conditions change. To keep earthmoving rolling efficiently, it's often necessary to shift equipment from one area — and from one type of work — to another. That's where your versatile 29.5 mph D 'Pull comes in

—turn page for more on "square peg D"

Square peg in a square hole!

(continued)

How D Tournapull® fills "square hole" assignments for bigger profits

handy. "D" easily moves from one section to another . . . handles pioneering, production, or clean-up work with equal facility. It serves as a roving troubleshooter — ready, willing, and able to fill in wherever needed on short notice.

9. Shouldering a specialist job

Shouldering is no job for big, awkward, wide-turning rigs. It requires careful maneuvering, and an accurate control of spread. To do a good job of it, your scraper should be able to spread a smooth, even lift — right up to the slab edge — without rutting or chewing up your fill.

With smooth-acting electric controls, D Tournapull can lay down a precision lift, accurate to within an inch. Fingertip, electric kingpin power-steer makes unit easy to steer. Under 9-ton axle-load limit — "D" can often be routed to return over newly seasoned concrete, for faster cycles. A square peg in a square hole, you'll find "D" fits shouldering assignments to a T.

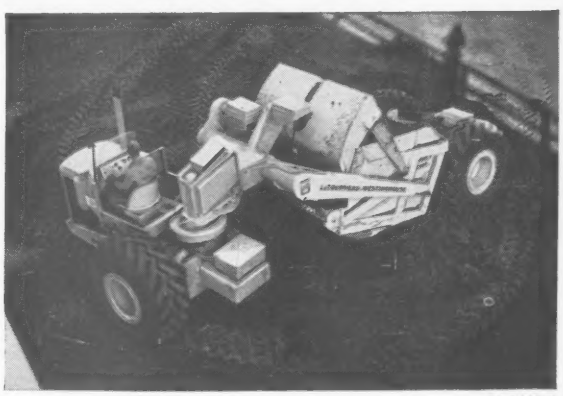
10. Clean-up method critical to profits

Clean-up operations are another critical phase of your project, where the *right* tool is all important. Too often this phase is neglected. You need adequate dirtmoving capacity to handle isolated cuts and fills efficiently. Yet you can't afford to waste a lot of time moving heavy equipment from one end of your project to the other for just a few hours' work. It doesn't pay.

D 'Pull handles such assignments fast and economically. It's just the ticket for sloping. And it's "a natural" for replacing stockpiled blacktop. Does a better job than your heavier, more expensive dirtmovers for construction of approaches, access roads . . . backfilling around culverts or overheads.

In dozens of specialized operations all along your projects, this fast 9-yd. LeTourneau-Westinghouse scraper saves you money . . . speeds completion of your contract . . . and keeps equipment investment down. Ask for detailed specifications, plus factual job reports for work like yours. Improved "D" is only 8′ wide, meets 9-ton axle limit . . . is roadable in all 48 states without permit.

Like to see a "Square peg D" demonstrated on *your* job? Suggest it to your nearby LeTourneau-Westinghouse Distributor.



DP-1445-G

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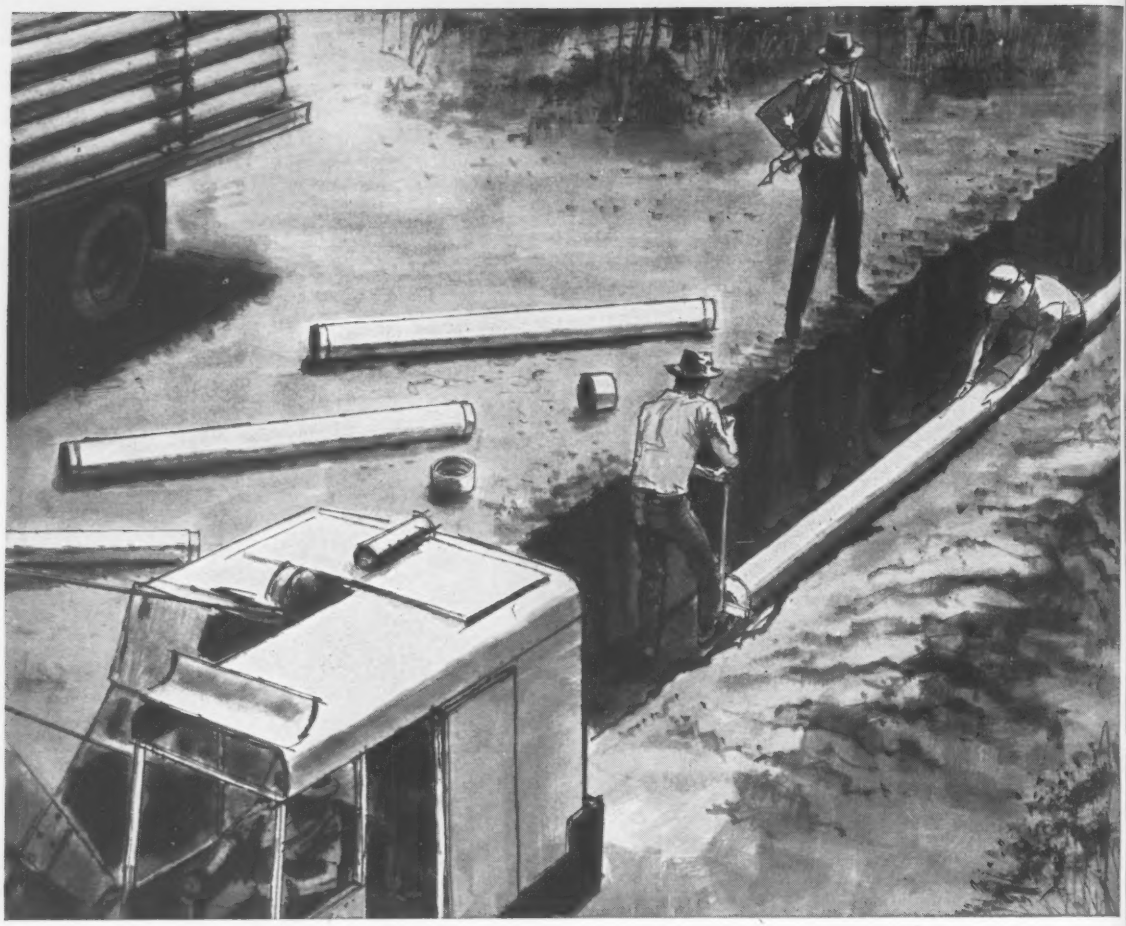
A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit



The job moves along fast
with Transite and the Ring-Tite Coupling!

Sectional view of Ring-Tite Coupling. Ring is cut away to show how rings are compressed and locked in grooves—*a tight, lasting seal!*

Transite Pressure Pipe is lightweight and easy-to-handle . . . quickly assembled with the Ring-Tite Coupling!

With Transite® Pipe, installation crews move along fast! So fast, they consistently keep up with the excavator—installing pipe as rapidly as the trench can be opened.

Ease of handling and simplified assembly explain these advantages. Light in weight, Transite is easier to truck, easier to handle on the job. With the Ring-Tite® Coupling only simplest tools are needed for joining—pipe ends are automatically positioned within the coupling to allow for expansion.

So save while you assure city officials and engineers top economy, long trouble-free performance with Transite. For its smooth interior (flow coefficient is C=140) *often* permits selection of smaller diameter pipe . . . *always* keeps pumping costs low. And since Transite can't tuberculate, water systems can be designed without allowing for future flow reduction caused by that form of interior corrosion.

Let us send you further information on Transite asbestos-cement Pressure Pipe and the Ring-Tite Coupling. Write for booklet, TR-160A, Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville TRANSITE PRESSURE PIPE

Conflicting Demands for Water

- **Nation vs. nation, state vs. state, use vs. use**
- **Conflicts exist in humid as well as arid areas**
- **But there are ways to resolve or avoid them**

Samuel B. Morris
Consulting Engineer
Los Angeles, Calif.

EDITOR'S NOTE: *This article is taken from a longer presentation made in San Francisco recently at an inter-society conference (American Society of Civil Engineers, American Society of Agricultural Engineers and the Soils Science Society of America) that preceding the World Congress on Irrigation and Drainage.*

Conflicting demands for water thrive upon scarcity. In humid areas of abundance, conflicts exist—but it is in arid areas that they are more difficult to resolve.

The most noteworthy conflicts over water have been international. Throughout 6,000 years of history, Egypt has built its civilization upon the waters of the Nile. But Egypt does not now, nor never has had full control over this historic stream, either physically or politically. While the Nile has met the need of Egyptians by its unregulated natural flow through 60 centuries, we suddenly find (only 54 years after the first Aswan Dam was built on the Nile) that a great international struggle is triggered off by the withdrawal of financial support sought by Egypt to build the greater Aswan High Dam. This dam proposed for Egypt would create a lake extending deeply into the Sudan and spreading over irrigated lands in that new nation.

Conflict Over Irrigation

Already the Sudan is asserting large claims to the waters of the Nile, and it has not agreed to the flooding of its lands by the lake which would be created by the Aswan High Dam.

And so a great water project, the proposed Greater Aswan Dam on the historic international Nile River in one of the world's oldest countries, may be the springboard for another international crisis.

In contrast to this evidence of international conflict over use of water in arid regions is the record of the historic Danube, rising in southwest Germany and Switzerland and flowing through Austria, Hungary, Yugoslavaia, along the border between Romania and Bulgaria and between Romania and the Soviet Union, to the Black Sea. On this great international river of commerce and major historic cities, there has never been an international crisis over conflicting claims to the flow of the Danube. There have been conflicting claims to its navigation and commerce from feudal times but no conflicts over diversions from the river. All have used it freely for their water supply, waste disposal and navigation.

The sharp contrast between the long history of the Danube and of the Nile emphasizes the essential difference in conflict over the waters of these great international waterways—the one in the humid area free from conflicts over diversion and use of its waters and the other in an arid area where increasing conflict is indicated as it becomes increasingly apparent that the Nile has insufficient flow fully to provide for all of the several nations' demands for its use. This use is mainly for irrigation. Irrigation—that consumptive use of water so necessary to sustain life in an arid area, and yet so limited and precious to the people and their lands.

Conflict Over Power

Another of the conflicting demands for water is for the opportunity of hydroelectric development. The great dams and power plants on the main stem of the Columbia River are dependent on streamflow originating in major part in British Columbia, and also for substantial streamflow regulation afforded by the Arrow Lakes in the headwaters of the Columbia River in Canada. Until recently, there has been consideration only that there should be adequate water storage. Now a new problem has arisen.

Spurred on by the success of diverting water from the Skeena River to a shorter course and large fall into the Kitamat, enabling the Aluminum Company of Canada ultimately to develop 2 million kw close to seaboard, the Canadians are now proposing to divert the Columbia River in Canada into the Fraser River. By this means they could develop the river's full head to tidewater in Canada instead of losing 1,300 ft of the head to projects on the Columbia River in the United States.

This is an international problem which shall have to be solved by negotiations and agreements between the two nations in a combination of law and international amity between friendly nations.

Interstate Conflicts

Inside the U. S. the Ohio-Mississippi rivers may be likened to the Danube. There is no conflict over the diversion and use of the waters of these rivers—except for the conflict over Great Lakes water levels and Chicago's diversions of Lake Michigan water into the Illinois River for navigation and sanitation. This controversy has been decided by the U. S. Supreme Court Decision limiting such diversion to 1,500 cfs.

On the other hand, there is serious conflict between the several states over the diversion and use of the waters of the Colorado River. The principal consumptive use is for irrigation purposes. The Colorado, like the Nile, is a river flowing from areas of large rainfall in its distant headwaters, through semi-arid areas, and finally through arid dry desert areas on its path to the sea. Like the Nile, the first major consumptive use of the Colorado River has been to irrigate the desert valleys along the River, at Palo Verde, Imperial Valley, and in Mexico.

Oddly, the shortage of water on the Colorado is being brought about not by the conflicting works of local persons, corporations or public agencies, but by the indulgences of the great paternal government of the U. S., which is causing water to be put on high lands of short growing season at costs many times what the irrigator can afford to pay, or would pay if it were not for federal subsidy and assistance.

My own strong opinion is that greater population and industry will grow in the states of the Colorado River if the waters of the river are left to a more free economy which would result in these precious waters remaining available for gradual development for the higher use of population and industry. Such industries and growing populations will create increasing demands for water that may encroach upon the water heretofore used by agriculture.

Cities vs. Irrigators

Everywhere it is realized that domestic and municipal uses are the highest use of water. If the lands first irrigated are

(*Continued on page* 58)

the same lands absorbed by expanding urban requirements, a natural and happy condition results in the normal conversion of farm lands to the higher value of urban use. A far different and unhappy condition arises when it becomes necessary for an expanding city to purchase the lands and water rights from an existing or contemplated irrigation area.

I cannot too strongly urge against any planned temporary use of water for irrigation which contemplates that at some future date a distant city shall acquire such irrigated lands and dry them up to transfer the water for the increasing demands of population and industry on such distant lands.

In Humid Areas

Even in humid areas, with more than adequate water for all consumptive use purposes, there are conflicts between water users, sometimes between one character of use and a different character of use, or competition between users for the same character of use. Those who use our rivers for waste disposal are frequently in conflict with fish and wild life, recreational uses and with domestic and municipal uses.

Reservoirs to provide for flood control, stream regulation, water supply or power development take land out of other beneficial uses and alter fish and wild life habitats. Anadromous fish cannot pass high dams causing major problems to large commercial fisheries as well as sportsmen. There are problems in the drainage of swamp lands. New values in land uses may be created and at the same time game refuges may be destroyed.

Provision of empty storage space for flood control is inherently in conflict with use of such capacity for storage of water for water supply, irrigation or power development. It is necessary to add the several storage requirements for beneficial purposes to determine whether there may be sufficint storage created to fill the requirements of each beneficial use. If not, then some beneficial use must be decreased or perhaps, foregone altogether.

Plan to Avoid Conflicts

Coming to the affirmative side, what can be done to avoid any conflict in uses of a water resource? Certainly this can best be approached through intelligent planning of each drainage basin on a multiple-purpose use basis. This can only be done safely if there are adequate basic data available—topographic, geologic, and soil classification mapping as well as studies carried out and records collected for long-time rainfall, runoff, sedimentation, temperature, humidity, and evaporation conditions.

Upon these bases of physical data, we must project the type of people who are to inhabit the area, their customs and economic opportunities in order reasonably to predict the best ultimate water and land development. Such a study will reveal certain favorable sites and methods of water storage and diversion, types of dams and reservoirs, opportunities for hydroelectric development, if any; the best balance of securing most economical flood control, by combination of storage, channel protection, flood plane zoning, and flood forecasting.

Also, such a survey and study will likely determine that certain natural dam and reservoir sites must be protected, and reserved from other use in order later to be utilized to accomplish the most economic water development for all useful purposes.

If the area involved is in a semi-arid region, where the natural waters are insufficient to supply all needs, then it is necessary to look as far ahead as possible in order to determine what lands can be best irrigated without robbing the higher economic opportunity of domestic and municipal use. Particularly, it is most helpful, as previously noted, if the lands to be irrigated are the same ones which may later be the locale of expanded urban use.

What is true of surface water is generally true for groundwater supplies, or combined surface and groundwater supplies. If a groundwater basin is overdrawn, the economic life of such groundwater is limited unless other water supplies are available. This limit, however, is different for each use, depending upon the capacity of the water user to pay. The domestic and industrial water user can afford a cost of water several times that to the irrigator. Accordingly, if a common overdrawn groundwater supply is furnishing both urban and irrigation use, it is but a matter of time until one by one the farmers are forced to abandon their irrigation unless they have a prior right to sufficient water to meet their requirements or additional water can be imported.

Other factors which may contribute to the failure of a groundwater supply relate to water quality. The use and reuse of water for irrigation, or the discharge of waste from municipal and industrial use may finally make the water unfit for use. Here again the irrigator is the first to suffer as municipal and industrial users can afford water treatment methods beyond those available to the irrigator.

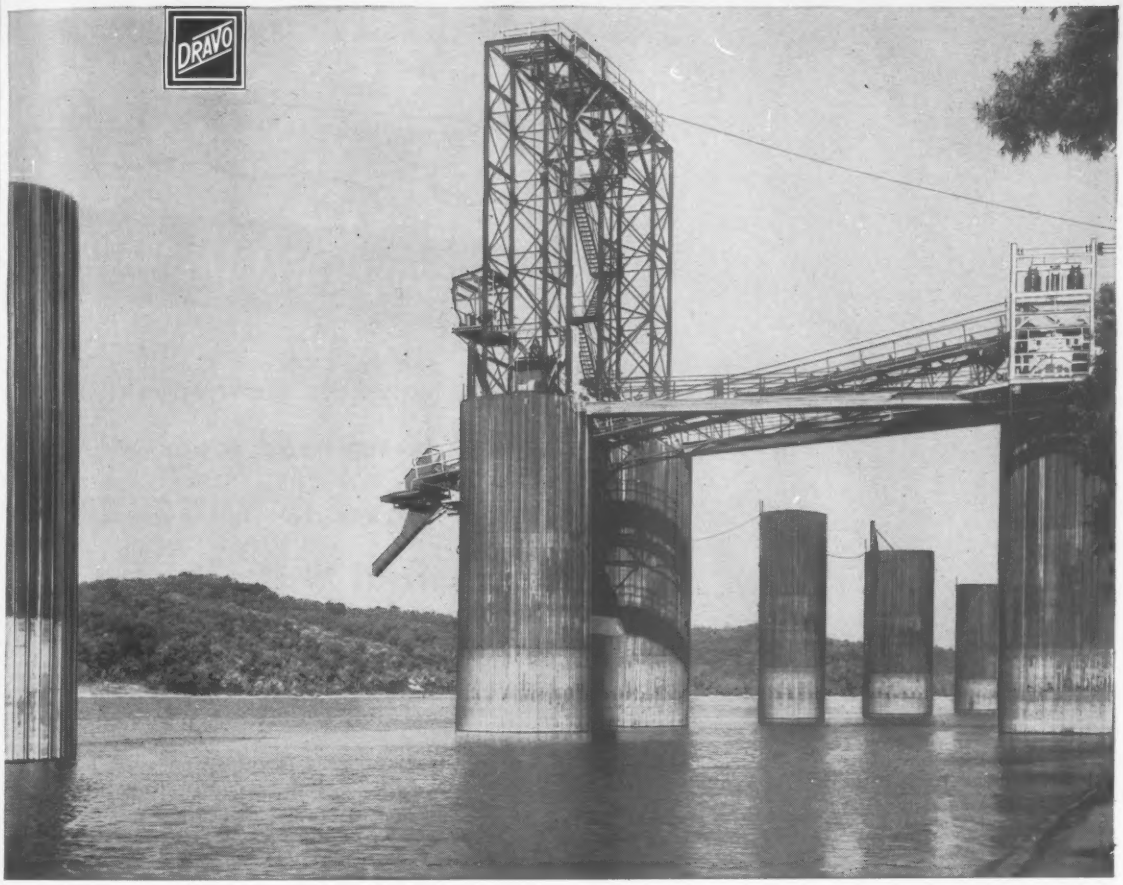
It is fundamentally clear that for permanence of irrigation, substantial quantities of water in excess of the combined rainfall and net irrigation crop requirements must be applied to the lands.

It is also equally clear, in the case of a closed groundwater basin, that there must be provision made for extraction of groundwater and conveying it beyond the basin limits or ultimately the groundwater will become saline as are the natural surface lakes in a closed basin.

Especially in Arid Areas

Conflicting demands for water can best be met by advance planning for all uses on a drainage basin basis. This may involve consideration of the gamut of water uses, domestic, industrial, municipal, irrigation, drainage, hydroelectric power, waste disposal, flood control, navigation, recreation, fish and wild life. If water supplies cannot be provided sufficient to meet every future requirement, then it is necessary to determine whether additional water supplies can be imported from afar. Sometimes such importation becomes feasible at a later date, after population and values are adequate to finance the cost of an imported water supply. If sufficient water to satisfy all purposes cannot be obtained, then a decision should be made based upon economic grounds as to which uses shall be restricted or not be provided for at all.

In arid and semi-arid parts of the world, especially, it is vitally important to determine the best type of economy to keep within the limits of water supply. With domestic and municipal use everywhere accepted as the highest use, irrigated agriculture must be designed to fit into the ultimate water-land economy. If the same lands first used for agriculture will gradually become urbanized, there may be little difficulty in the absorption of irrigated lands by urban requirements. If water must be taken from irrigated lands for later urban use elsewhere and the former irrigated farms dried up, then a tremendously difficult political-social-economic problem is created. Every effort should be made to avoid such a situation. From the standpoint of inferior economic value and less ability to pay, it would appear that the role of irrigation inevitably is subordinate to domestic and municipal water supply. In case of conflict with such higher use, irrigation is bound to lose to domestic and municipal use unless in the unforeseeable future population food requirements may require the utmost use of land and water for food production.



"MILLION TON" dock for new DeKoven Mine

Pittsburgh & Midway Coal Mining Company can load more than a million tons of coal annually at this modern, cellular type barge dock near Sturgis, Kentucky, on the Ohio River. A two-mile long, 42 inch conveyor belt connects the facility with the company's new DeKoven mine.

Eleven cells, three of which support the loading mechanism, are spaced along 1175 feet of shoreline. Constructed of interlocking sheets of steel piling driven to rock, each cell is filled with sand and gravel and topped with concrete. Ruggedness, economy and minimum maintenance make this an ideal type of dock for most purposes.

In the past eight years, Dravo has installed more than 100 of these docks for firms in the chemical, steel, coal, utility, railroad, petroleum and other industries. For more information on this or any of the products and services shown below, write to DRAVO CORPORATION, PITTSBURGH 25, PENNSYLVANIA.

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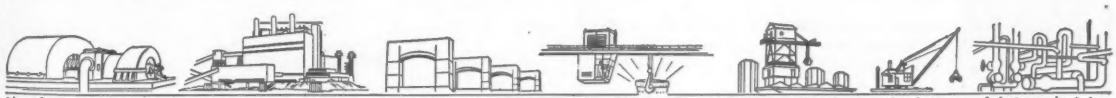

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A NEW IDEA: Reclaiming Waste Space

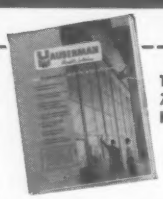
CORNELL AERONAUTICAL LABORATORY

made valuable floor space out of extra head room with Movable HAUSERMAN Industrial Walls

At Cornell Aeronautical Laboratory in Buffalo, New York, additional office area was reclaimed from overhead space formerly wasted, in a building with a 32-foot ceiling. It was done by erecting a two-story office building of Movable HAUSERMAN Industrial Walls *entirely within the old building.*

Cornell Lab's plant engineering department conceived the plan . . . HAUSERMAN carried it out. Using standard industrial walls, HAUSERMAN engineers planned a building 25′ x 64′ x 18′ 6″; a second floor at the 9′ 6″ level with stair wells at each end. HAUSERMAN standard ceiling construction proved ideal for ventilating and lighting equipment for all of the second-floor offices as well as the first-floor shops.

With HAUSERMAN working as a subcontractor on jobs like this one, responsibility for the complete interior can be in one source of supply, reducing the need to coordinate several trades. Result: less time spent in field supervision . . . full profit on the job.



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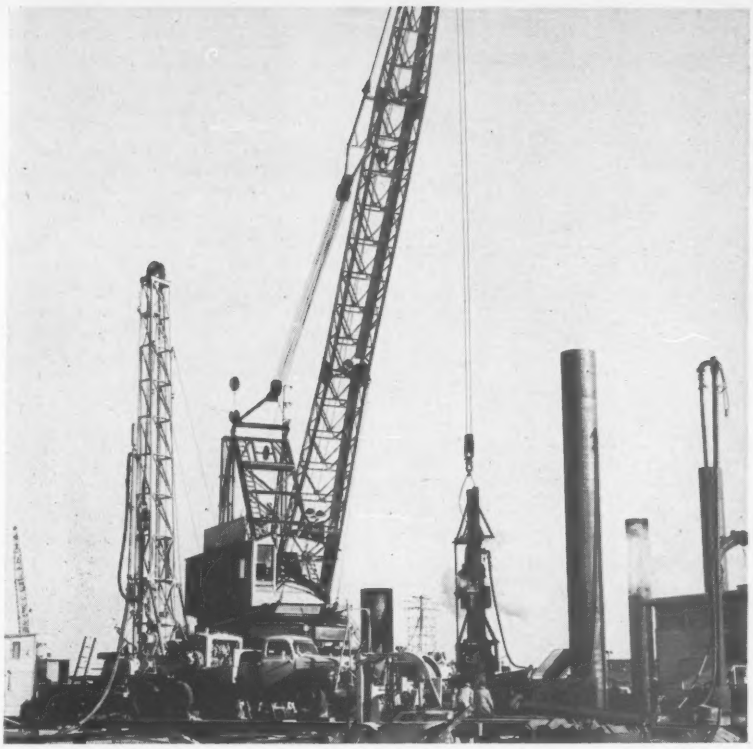
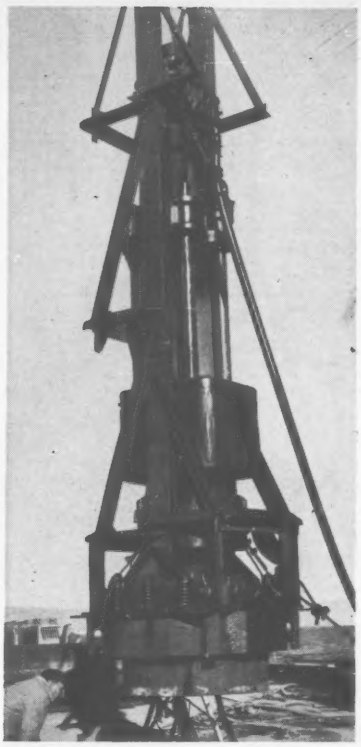


STEEL SHELLS for wharf support put down to bedrock by alternating driving with airlift removal of material. Truck mounted rotary rig (left) drills socket into rock below shell tip.



BOX TYPE LEADS include 30,000 ft lb steam hammer and a driving anvil.

Big Pipe Caissons Go 135 Feet Down

Sixty 4 ft dia steel pipe caissons are being placed to depths as great as 135 ft to support a wharf at the San Francisco Naval Shipyard. Modifications in design and changes in construction procedures have resulted in a smoother job than was the case for an earlier increment of the same wharf (ENR Feb. 2, 1956, p. 37).

The first contract involving 16 caissons going down as much as 150 ft was delayed more than a year in completion. A few of the caissons were broken or bent as they were driven, and there was blowback trouble in some of the units as they were unwatered for inspection or for construction of belled supports.

A major difference in the recent work is that the contractor selected an option that does not require unwatering the shells. Also, a program of caisson placement is being followed that loosens and removes material from inside the shells when driving becomes hard.

Design of the wharf support system calls for bents spaced on 42 ft centers with four caissons spaced on 14 ft centers in each bent. Due to possible lateral movement as well as subsidence of the intervening fill and soft layers, the caissons must go to rock bearing.

On the first construction increment, the design called for caissons to be unwatered, with a 10 ft bell excavated in the underlying serpentine rock. For some of the damaged caissons this base detail was modified to permit two 18 in. holes to be drilled into the rock. These holes were cased to facilitate entering the drill but had to be excavated at least 16 ft below the bottom of the casing.

On the current work, the design has been modified to give the contractor an additional option which has been adopted; drilling a full diameter (4 ft) hole through the caisson into the rock. After loose material has been removed, the holes and caissons are filled with tremie concrete. To check the adequacy of drilling, some of the first holes were inspected by divers before concreting.

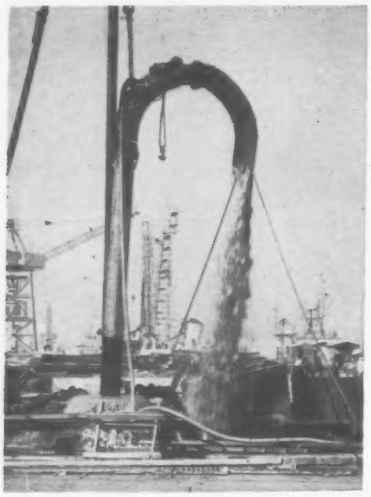
Vertical loading is resisted by the concrete core of the caisson. Horizontal forces that might be imposed by lateral movement of filled material and soft strata are resisted by the steel shell in bending. To develop moment resistance it is important that the cans be well embedded in firm materials. On much of the work the serpentine rock is overlain by a firm clay. Penetration through this into the decomposed serpentine is considered adequate for moment development. But on part of the job there is no firm clay layer. In these cases a cage of reinforcing is placed in the drilled-in-socket with the cage extending at least 4 ft up into the steel shell.

The steel shells are ¾ in. thick below El 55.75 (MLIW is taken as El 100 and top of the shells is at El 103.75). The contractor elected to make the bottom 3 ft of the caissons 1½ in. thick with a bevelled bottom forming a cutting edge. This additional thickness was aimed at minimizing the chance of bending or breaking the shell during driving.

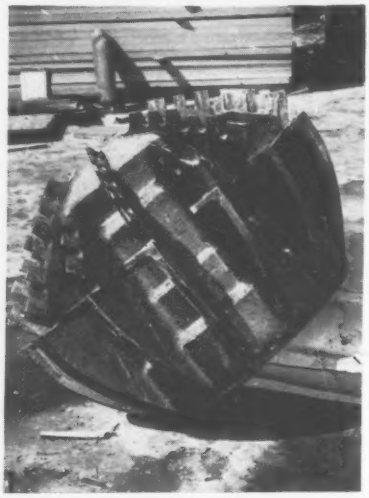
Bidding was based on drilling 12 ft into the rock. But depth varies with nature of the material as the serpentine bed rock is nonuniform. In the better material, depth of the drilled-in-socket was as little as 9 ft. In the most extreme case, the drilled hole went 17 ft befow the steel shell. Nature of the material was judged by drilling rates and by inspection of the wash tailings.

• **Construction changes**—A major construction modification made by the second increment contractor—Pacific Bridge Co.—was to place the caissons in sections rather than in complete

. . . Big pipe caissons go down 135 feet at San Francisco shipyard



AIRLIFT aided by 6 in. water jet removes material from shell. Airlift pipe is 14 in. dia.



SWIVEL-MOUNTED BIT drills socket at base of caissons. Bit is 44¾ in. dia.

TREMIE BUCKET is used to place concrete in the water-filled caissons. Air rams open gates after bucket reaches bottom.

lengths. This permitted easier handling of the long steel shells. And it allowed the contractor to alternate between driving and air lift removal of the material inside the shells.

Length of the initial section varied from 24 to 63 ft according to position in the wharf. Pacific Bridge selected the length to make sure the can could be driven well into the underwater strata.

The initial sections were held in alignment by means of timber wales attached to the existing wooden wharf that is being replaced.

The steel shells were driven by a 30,000 ft lb pile hammer mounted in box type leads with the anvil or driving head fitting into the top of the steel shell. Springs mounted on the anvil reduced the rigidity of the assembly to prevent bolt failure.

The shells were driven until nominal resistance resulted—or until an additional length of caisson was needed. When driving became hard, it was stopped and a large 14 in. dia air life pump was inserted in the shell. The large size was important to remove sizeable rock particles existing in some of the fill and underlying strata. The airlift was serviced by a 2 in. pipe that delivered air at 100 psi to a manifold about a foot from the bottom of the assembly. Also helping to loosen the material was a 6 in. water jet. An important aspect of the work was care in handling the jetting and airlifting; water level inside the caisson was never drawn all the way down. And only part of the material was removed—at least a 20 ft depth of material was kept inside the pipe. Driving was then resumed and continued until it became difficult, after which the airlifting was started again.

As the shells were worked down into the material, additional sections as much as 30 ft long were welded on as needed. The sections were held in place by brackets welded on the outside of the shell, alignment being assured through milled ends. Full penetration welding, from the outside only, made the joint.

When the caisson tip finally reached the required elevation, a 44¾ in. dia Zublin bit mounted on a swivel joint was inserted to drill the necessary hole into the rock. The drilling operation was serviced by a truck mounted rotary drill rig.

A water jet through the drill stem and bit kept drilled rock particles in motion and removed some of the finer material.

For concreting the holes Pacific Bridge designed a 2½ cu yd tremie bucket, 12 ft long, 3 ft in dia and equipped with a gate that was actuated by an air ram.

A lid was provided but found unnecessary as the bucket was always filled. Gate closure is effected by rubber encased springs.

Where reinforcing cages had been inserted at the bottom of some caissons, a normal tremie pipe was used for initial concreting.

Concrete in the shells was a 7¼ sack mix aimed at 3,500 psi strength after 28 days.

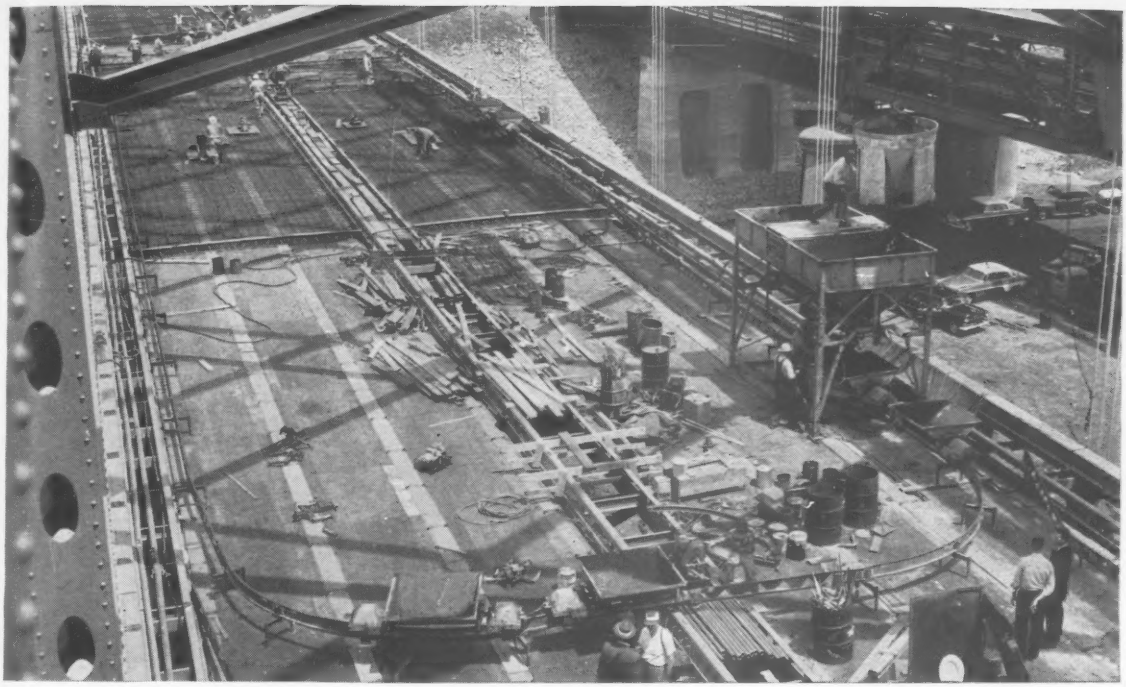
Progress on the work has been good. Once the job was well underway, the contractor was finishing one complete four caisson bent every 10 to 12 days. This includes the deck system.

The work is a project of the Bureau of Yards & Docks of the Navy. Capt. J. A. McHenry, District Public Works Officer, Twelfth Naval District, is officer in charge of construction. Capt. J. T. Riordan, public works officer of the shipyard, is resident officer in charge of construction assisted by Glenn H. Rogers.

Design of the project was accomplished by John A. Blume and Associates, consulting engineers of San Francisco, with Joseph P. Nicoletti project engineer.

The $1.6 million lump sum competitive bid contract is held by Pacific Bridge Co. Mac Silvert, then chief engineer of Pacific Bridge, organized the operation.

Al Cantor is project superintendent and Jan Cipar is project engineer.



Thirty yards an hour around the loop.

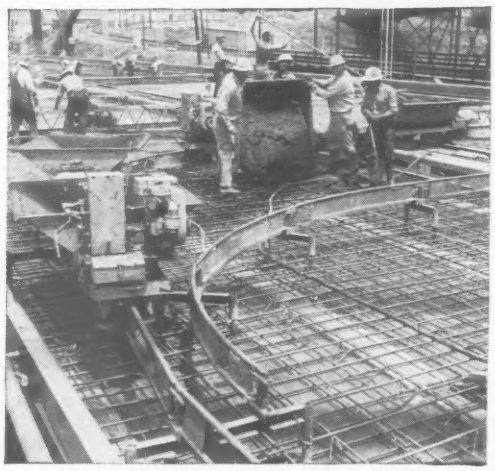
TOLL BRIDGE FAR AHEAD OF SCHEDULE WITH REX RAILPORTER

The deck of the new Kansas City toll bridge is being poured with the aid of CHAIN Belt's new Rex Railporter...and because of this revolutionary new method of concrete transportation and placement, the bridge may be done weeks ahead of schedule! A terrific saving in time and earlier toll revenue.

The Rex Railporter, a portable construction materials transport, whisks along with a 20-cubic-foot load of concrete down its single rail from loading bin to pour site faster than you can say "Missouribridgekansascity." The Rex Railporter runs unattended and stops automatically. Two men can easily lay 100 feet of track in less than 20 minutes.

The J. A. Tobin Construction Company, using three Railporters with trailer units on an oval track, pours about 30 yards an hour . . . the same pouring rate would require a fleet of power buggies.

If you have a concrete placement or materials transportation job over reinforcements, open cuts, muddy terrain, excavations or water...investigate the Rex Railporter at your Rex Distributor or write for Bulletin No. 56-47, CHAIN Belt Company, 4633 W. Greenfield Avenue, Milwaukee 1, Wis.



Another rail is ready as the pour approaches.

REX CHAIN BELT COMPANY

MOTO-MIXERS • BUILDING MIXERS • PUMPCRETE • RAILPORTER • PUMPS

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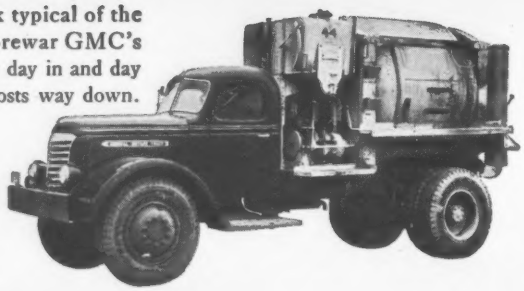
Here's a transit mix typical of the Maloney group of prewar GMC's —still making money day in and day out, while keeping costs way down.



Inside story on

THE 10-YEAR-SELLING NEW GMC's

THESE FAST-STEPPING, V8-POWERED FW550's are some of the newest additions to Maloney's 94-GMC fleet. Other recent additions include new Turbopower Diesel models equipped for larger loads. These newest trucks are proof on wheels of Maloney's satisfaction with GMC's—used consistently in his fleet for more than 25 years.

OLD TRUCKS BY THE SCORE

Maloney Concrete's veteran transit mixers help explain the biggest tandem sales in all GMC history

MALONEY CONCRETE, of Washington, D. C., has experience with GMC transit mixers that dates back to the '30's.

"GMC built 'em the way we wanted 'em" is their reason. The same reason applied to later purchases that account for Maloney's present 94 GMC units.

And GMC's way of building those trucks is responsible for operation records that have the construction field talking today. For a group of Maloney's older transit mixers—some ten years old, some up to 17—have histories that show downtime—except for normal maintenance—as a rarity. And all upkeep costs have been amazingly low.

So low, in fact, that construction haulers have been trekking hundreds of miles to study the actual records—and the veteran GMC trucks that made them. What's more, they've been going home and buying GMC tandems—at the fastest clip in all GMC history.

And remember—seven big GMC super-tandems blanket the 40,000-63,000 GVW field. In any one of them, you get the top truck—and top truck-ability—your money can buy. Check that at your GMC dealer's!

GMC TRUCK & COACH—*A General Motors Division*

Seven waterfront areas are keys in a spectacular . . .

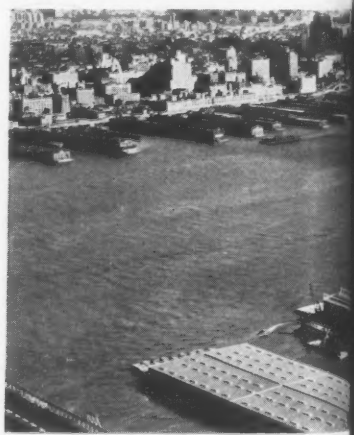
Drive Aimed to Keep New Yor

With about $521 million already spent, and $265 million either committed or available, the Port of New York is making real strides toward insuring its position as the major United States sea port.

Two agencies—the Bi-state Port of New York Authority which is spending $105 million, and New York City's Department of Marine and Aviation which plans to spend an estimated $129 million—are supervising the vast program. Work now in hand includes the rehabilitation of 16 facilities, and reconstruction or new construction of 31 others.

Already complete and operating are such projects as the three piers at Hoboken, facilities at Port Newark, Brooklyn's water front grain elevator and Grace Line's Pier 57-58 in Manhattan. Still to be done are four cargo distribution buildings, a four and three-berth terminal and a wine terminal at Port

PORT NEWARK—where a total of $26 million is being spent to improve one of the larger harbor installations. It has lighterage service from three railroads.



HOBOKEN—an $18 million facility includes two steel and concrete general cargo

Port on Top

Newark, and Brooklyn's Atlantic Basin Marine Terminal.

On Manhattan's Hudson River waterfront, piers from West 23rd Street to 37th Street will be redeveloped, as well as a Christopher Street Terminal, Holland-America Line's Pier 40 and East River Piers 4 to 44.

What The Changes Are

1. **Port Newark** – Four cargo distribution buildings; a $10 million four-berth and a $6.1 million three-berth terminal; a $1.6 million cargo terminal building and a $1.2 million bulk wine terminal.
2. **Hoboken** – Site of the now complete $18 million terminal, boasting the widest pier in the Port, considered a model for future piers.
3. **Hudson River** – Area to be redeveloped along Manhattan's waterfront by the Department of Marine and Aviation.
4. **East River** – (Piers 4 to 44). This waterfront section will get a face lifting in addition to six wide general cargo piers, one semi-marginal cargo berth, and marine terminals for the distribution of building materials and fuel.
5. **Brooklyn Waterfront** – Site of $85 million development along two miles of choice waterfront. Work includes construction of 10 new piers, the rehabilitation of an existing pier, and the improvement of 50 acres of upland area.
6. **Brooklyn Terminal** – Site of the City's newly planned 39 Street Terminal and the fire-damaged 35 Street pier which is being rebuilt.
7. **Grain Terminal** – The completed $3.4 million grain elevator off Gowanus Bay with a capacity of 1,800,000 bushels and Columbia Street Pier.

The New York port area has been for some time losing trade to Philadelphia, New Orleans and other ports. This decline occurred partly because of labor troubles, but the real reason was the antiquated, obsolete and outmoded facilities existing in the area. Something had to be done to maintain the city's position as the top world port.

With the added threat of the St. Lawrence Seaway to the north and west, the numerous communities that make up the port area have turned increasing attention to promotion and improvement. Smaller communities, as Hoboken and Newark, turned to the self-financing Port of New York Authority for aid; while New York City itself could do much of its own work.

• New Jersey Side

Spearheading the whole program, at least in terms of work under way, is The Port of New York Authority's pier construction and improvement plans. Started nine years ago, it is rapidly nailing down the port's future in terms of solid concrete and steel.

Based upon fundamental design principles that will assure operating economies to shippers, PNYA expects to provide facilities in Brooklyn that will be equal in efficiency to its terminal recently completed at Hoboken. Most of the new piers are to be of the finger type, and will be patterned after Pier A at Hoboken.

• **Hoboken—Model Job**—The $18 million Hoboken Terminal is located on the Hudson River about nine miles north of The Narrows, on a 1,700 ft section of the New Jersey shore. Pier A is at the south end and Pier C is at the north end of the property, with rebuilt Pier B between the two.

Pier A was the first new pier to be built in Hoboken in 25 years. It was occupied by American Export Lines.

The single-story, fire resistant and fully sprinklered cargo piers are built on steel piles driven to rock. The piles are protected against rust by a cathodic process. The piers measure 328 ft and 323 ft wide (the widest in the port) and 700 ft long each providing 192,440 sq ft of covered space. There are wide

piers, the widest in the Port of New York, a passenger-cargo pier and a headhouse.

ON THE HUDSON RIVER—a $19 million cargo and passenger terminal for the Holland America Line will occupy the waterfront side at West Houston Street.

. . . New York's Port: plans for New Jersey shore

aprons, direct rail connections, ample space for trucks to load and unload cargoes, and a continuous loop traffic lane that enables trucks to enter and leave the piers without turning around. Pier C, practically a twin to Pier A, was completed in November of last year.

The two-story Pier B was completely modernized to handle passengers and cargo on the second deck, and cargo on the first deck. The headhouses were rehabilitated to provide office space, shop areas, cargo storage space, a passenger waiting room and other passenger facilities. The modernization work also included new lighting, a sprinkler system, deck nozzle openings, the widening of aprons from six to 12 ft, the enlarging of doors on the river end, painting and general repairs.

Just what such well planned marine terminals can mean to port business shows up very quickly in tonnage records:

In 1953 the facility handled only 182,207 long tons of cargo. By 1955 this had climbed to 258,841 long tons; it jumped again to 331,015 long tons for 1956. In 1957 an estimated 800,000 long tons will be handled.

The highly satisfactory operation of the marine terminal at Hoboken has demonstrated according to Port Authority engineers, that large cargo terminals on one level, adjacent to shipping berths, increase the efficiency of freight handling, speed up ship turnaround, and permit prompt loading and discharge of trucks to effect savings that more than compensate for the added investments in space.

TWO MILES OF CHOICE BROOKLYN WATERFRONT looking south from the Manhattan side, as it will appear upon completion of the seven year, $85 million program.

THE PORT AUTHORITY GRAIN TERMINAL is a combination storage and transfer elevator with a capacity of 1,800,000 bushels.

• **Port Newark**—A total of $26 million is to be spent at Port Newark to improve one of the larger harbor installations of the PNYA group, located on Newark Bay about nine miles from The Narrows. It is adjacent to Newark Airport and in the heart of New Jersey industry, yet only 25 minutes by truck from New York City, is served by three railroads, all of which provide lighterage service to and from shipside and wharves.

The channel is 7,000 ft long, 685 ft wide and was recently dredged to a depth of 35 ft. The approach channel from The Narrows through the Kill Van Kull and Newark Bay is also 35 ft deep.

Four new cargo distribution buildings, to cost about $4.4 million will be built on a 1,000 by 800 ft site on the south side of the channel. Construction of the one-story buildings, with a total area of 412,160 sq ft, was started this spring with completion scheduled for the end of 1958.

Each of the four structures will be 640 ft long and 160 ft wide, divided into four sections, built at truck-bed height, with truck back-up space on one side and railroad siding on the other. All door openings will have protective canopies.

Other features of the new buildings will be a clear interior height of 18 ft, and asphaltic concrete floors capable of supporting a 500 psf floor load. A total of 68,600 sq ft of paved open area will be provided at the ends of the buildings for open storage or parking.

Other facilities now under construction at Port Newark include a $10 million four-berth terminal; a $6.1 million three-berth terminal, and a $1.6 million cargo terminal building, and a $1.2 million bulk wine terminal to be occupied by the Petri Wine Company.

Construction of the four-berth terminal started in March 1956 on a 24 acre site. Completion is expected in the early part of 1958. The facility will consist of two cargo sheds, each 880 ft long and 200 ft wide; a two story air-conditioned office building with about 8,000 sq ft of office space; a 400 car employee parking lot; and a 12,800 sq ft stevedore garage. The wharf area will be 2,400 ft long and 50 ft wide and will be equipped with a double railroad track. A truck platform at the rear will be capable of handling 140 trucks.

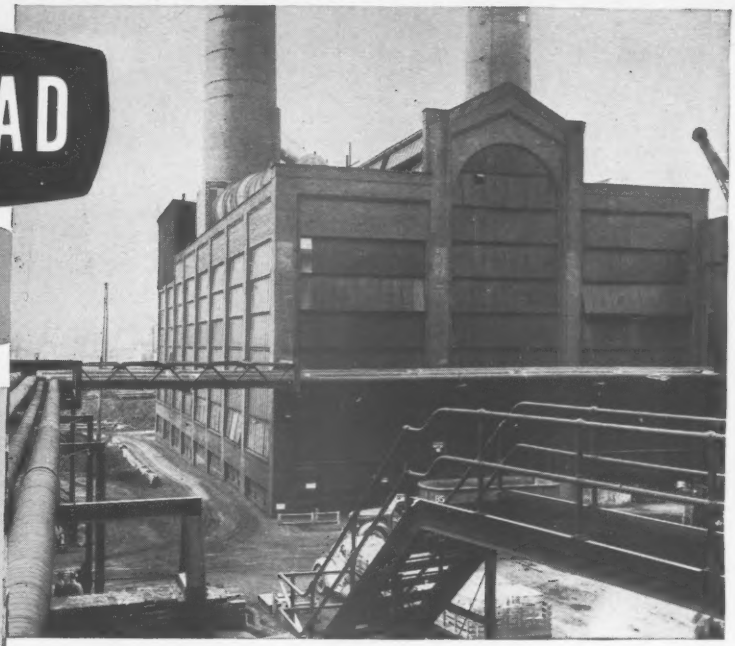
The three-berth, $6.1 million terminal, will be located on the north side of the Port Newark channel, while the $1.6 million cargo terminal building will be built adjacent to an open wharf on the south side.

When completed, the three-berth terminal will boast three new aluminum-clad cargo terminal buildings served by a 58 ft wide wharf extending for 1,860 ft along the channel. This will provide three deep-sea ship berths, each 620 ft long. Each of the cargo buildings will have a gross area of 91,000 sq ft and will be 520 ft long and 175 ft wide. There will be eight

OVERHEAD

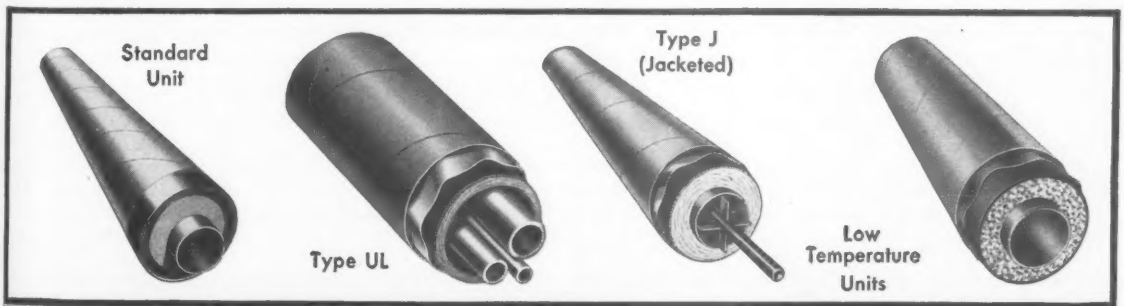
OR

underground



Ric-wiL offers the COMPLETE quality line of prefabricated piping systems

Ric-wiL factory prefabricated piping systems, *timed* to your schedule and *shipped* directly to the job site, can save you valuable time and money. Insulated units are available for steam, hot water, oil, other viscous fluids, process liquids and refrigeration lines . . . and remember . . . Ric-wiL is the quality system of exceptionally high mechanical strength and thermal efficiency.



Quality Piping Systems . . .
. . . of Exceptionally High Thermal Efficiency

RIC-WIL INCORPORATED

PREFABRICATED INSULATED PIPING SYSTEMS

BARBERTON, OHIO

IN CANADA: THE RIC-WIL COMPANY OF CANADA LIMITED

Write for a copy of the new Ric-wiL Catalog . . .

. . . New York's port: Work in city area

From This—Existing areas consist of **A** Piers 72 to 77; **B** Auto storage, bulkhead coal hopper and truck transfer operation; **C** Heliport; **D** Pier 68, Delaware, Lackawanna & Western Railroad; **E** Erie Railroad transfer bridge; **F & H** Erie Railroad Pier 67 and Baltimore & Ohio Railroad Pier 66; **G** Lehigh Railroad transfer bridge; **I** Baltimore & Ohio Railroad transfer bridge; **J** Baltimore & Ohio Railroad Pier 65.

To This—Redevelopment **A** New Pier 75, a United States Lines Terminal; **B** New railroad freight terminal; **C** Heliport; **D** New railroad freight terminal; **E** Railroad transfer bridge; **F & H** New Erie Railroad freight terminal; **G** Railroad transfer bridge; **I** Railroad transfer bridge; **J** New Baltimore & Ohio Railroad freight terminal; **K** Panama Line's Pier 64; **L** New Baltimore & Ohio Railroad freight terminal.

doors 20 ft wide and 18 ft high in front and eight doors 20 ft wide and 14 ft high in the rear. Each building will be equipped with a 20 ft wide truck and rail platform at the rear and double sets of railroad tracks in the front and rear, with crossovers. The design floor load of each structure will be 500 psf.

The cargo building to be erected on the south side of the channel will have a gross area of about 88,000 sq ft and will be 440 ft long and 200 ft wide, and will be similar to the others in terms of equipment and facilities.

The waterfront wine terminal, with direct pipeline service from special tankers, will be leased to the United Vintners Inc. for a ten year period.

It is expected that the new facility will handle some 14 million gallons, or 60,000 tons, of bulk wine a year. The wine terminal will include a sprinklered and heated building 440 ft long by 150 ft wide, housing, storage, bottling and office space. Four 800 ft pipelines, capable of handling four types of wines simultaneously, will extend from Berth 14 on the south side of the channel to the north side of the building.

A 175 ft truck platform will service the structure on one side and an 80 ft rail loading platform on the opposite side. A 12,000 sq ft paved vehicular parking area will also be constructed.

• Long Island Side

By 1962 the Brooklyn part of the Port Authority's program will be completed. Plans cover an $85 million marine terminal development program along two miles of Brooklyn's choice waterfront.

The Port Authority's development of the waterfront has been made possible by the bi-state agency's purchase of the properties of the New York Dock Company, extending southward from a point near the Brooklyn Bridge to and including Atlantic Basin.

Construction of the first of the new terminals—the $8 million Pier 11, a three berth quay in Atlantic Basin—started in July 1956 and should be completed in April 1958. Planned as one of the most efficeint harbor installations in the world, the quay will be 2,100 ft long and 270 ft wide. The single story shedded area will be 1,800 ft long and 150 ft wide, with a 25 ft wide apron. In addition, a 20 ft wide truck loading platform will parallel the entire length of the land side to handle 144 trucks at a time.

The remainder of the two mile development will be built over a seven year period to assure the least possible degree of disruption to operations of occupants of the existing facilities.

In all, 25 narrow, obsolete piers will be replaced with 10 wide steel and concrete structures, fully fire resistant and fire protected. One existing pier in the Atlantic Basin area will be completely rehabilitated.

The total development will provide 25 ship berths. The 10 new piers will have a total shedded area of over two million square feet as compared with the existing 1.5 million square feet, an increase of about one third. Thirty foot aprons and extensive truck service areas will be provided at each facility.

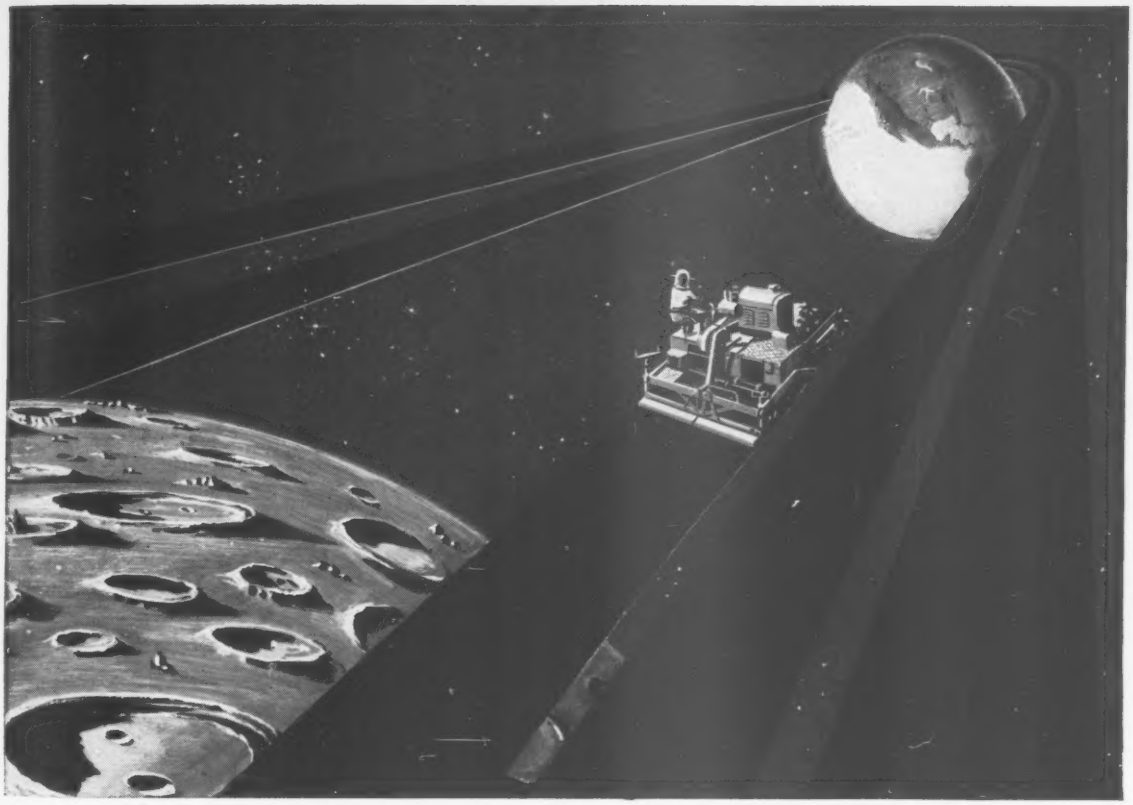
All of the piers will be built at an elevation of 12 ft above mean low water. Most of the piers in the New York Harbor today are about 9½ to 10 ft in elevation, and there have been several instances in past years when floods following hurricanes, high tides and high winds have damaged cargo on the piers.

An increase in the width of slip space between piers from 200 ft to 300 ft will expedite the docking and departure of vessels, which must contend with strong tidal flow that makes navigation difficult. The entrance to the Atlantic Basin will be widened from 300 ft to 600 ft to permit easy negotiation of the 90 deg turn from Buttermilk Channel.

• **Warehouse areas**—The 50 acre upland area, now occupied in part by obsolete Civil War era multi-story warehouses, will be cleared to provide paved area to accommodate cargoes and handle the 3,000 trucks a day which comprise the pier cargo traffic. This type of truck handling will relieve the adjacent Brooklyn streets of congestion now caused by vehicles moving to and from the piers, at the same time is expected to reduce the cost of freight trucking by eliminating street traffic delays in the area. It will also eliminate interference with ship loading, unloading and other phases of cargo handling.

The pier site properties lie in the heart of one of the greatest freight generating centers of the world. They have excellent highway approaches to and from nearby Manhattan by way of the East River bridges and the Brooklyn-Battery Tunnel. The proposed Narrows Bridge and north-south Brooklyn Expressway would further improve the land access to the waterfront area. The area is also served by a system of internal switching tracks operated by the New York Dock Railway.

• **Terminal planned**—In the same area, a new 39th Street Brooklyn Shipping



The 5th (s)trip to the moon has been started

By conservative estimates, the thousands of Barber-Greene Finishers throughout the world have started paving their second million miles. That is the equivalent of more than four trips to the moon. The current design of the Model 879-B is based on that experience.

Improving the Barber-Greene Finisher is not new. Scores of major improvements have been embodied in its design since it was first released to the field 20 years ago. Each engineering advance is backed by experiences in laying every type of mix in virtually all conditions.

Latest improvements include:

New transmission — increases both operation and travel speeds, still provides 12 forward speeds for a wider range of operation.

Higher speed tamper — permits faster laying speeds and reduces maintenance costs.

New crawlers — precision-drilled pads and larger pins further decrease maintenance costs.

New power unit — 20% more power for pushing bigger trucks up steeper grades, with a greater reserve for high altitude and higher operating speeds.

Note to Barber-Greene Finisher Owners: *You can have any and all of these improvements on your machine. Necessary parts are available in kit form for each separate modification. Write for the folder describing the various kits.*

57-5-F

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

. . . New York's port: Civil War piers to go

Terminal is planned by the City's Department of Marine and Aviation for an estimated cost of $10 million.

The city plans to acquire ownership of the adjacent Bush Terminal's Pier 8, and fill in the dock area between 36 and 39 Streets. Removal of the existing building on the Pier 8 side is contemplated, also dredging of the river bottom along the south side of 39 Street.

Rebuilding of the city's 35th Street pier which is leased to the Luckenback Lines, and which was destroyed by an explosion and fire last year is a major part of the city's plan for the area.

• **Grain Elevator**—Another Brooklyn installation is the Grain Terminal, (built in 1922 by the State of New York as part of the State Barge Canal System) which was transfered to the PNYA in 1944.

The terminal, located in the Gowanus Bay section, includes a grain elevator, a new deep sea grain pier and shipping gallery constructed by the port authority, the Columbia Street Pier and an open public storage area. Since 1944 the elevator, piers and upland areas have been completely rehabilitated with a total investment of $3.4 million. With a storage capacity of 1.8 million bushels, the elevator and its grain gallery permits the loading of grain directly to deep-sea ships. The pier accommodates four vessels simultaneously. The five-acre upland area adjacent to the elevator and pier is utilized as a public lumber storage area.

• Manhattan Island

• **Hudson River**—Along Manhattan's Hudson River waterfront, the Department of Marine and Aviation plans to help the Cunard Line increase the cargo capacity of its terminal by adding 140 ft width to the existing 125 ft wide Pier 92, at an estimated cost of $4 million.

The addition to the existing structure would be done on the north side and would increase the facility's present cargo handling area from 97,000 sq ft to 213,000 sq ft. This added space would add to the efficiency of handling ship, truck and lighter freight movements.

Eighteen over-the-road truck berths at the inshore end of the new addition would permit off-street loading and unloading, and would also materially relieve traffic congestion in the pier area. It is planned to start construction activity early this year and be completed in 1958.

Also along the Hudson River on Manhattan's waterfront, Piers 57 and 58 have recently been intergrated and modernized at a cost of approximately $1 million to form the Grace Line Terminal.

An enlarged bulkhead platform south of Pier 58 was constructed to join a similar platform north of Pier 57 and to connect the second deck of Pier 57 with the second deck of the new extension. Off-street loading and unloading berths for 26 trucks and an easy turnaround area have been provided.

Automatic conveyor elevators at the inshore end have been installed as well as a heavy duty freight elevator.

For the Delaware, Lackawanna and Western Railroad, a new railroad freight terminal at an estimated cost of $1.2 million is planned for construction on the site of the old Christopher Street ferry berth.

Preliminary plans call for a 300 ft long, one story shed parallel and contiguous to the bulkhead and 100 ft wide extending outshore. Berths for five carfloats will be provided as well as a loading platform at the inshore side to accommodate 24 trucks at one time.

Office space and mechanical freight handling conveyors are planned.

A $19 million, square cargo and passenger terminal for the Holland America Line—a new Pier 40—will occupy the waterfront site at West Houston Street.

The terminal will be approximately 810 ft by 805 ft with the south side extended 175 ft to the pierhead line. It will have four ship berths. An open interior court will have 125 cargo loading and unloading berths for larger over-the-road trailer trucks.

The main deck is to be used entirely for cargo operations and the upper deck will be equipped for passenger services exclusively. Parking of visitors' and passengers' cars will be permitted on the upper deck. The feasibility of using the roof of the structure as a public parking facility accommodating 1,000 automobiles is being considered.

Further south, at Spring Street, Pier 36, a 1,000 by 75 ft structure, is scheduled for reconstruction. This facility is too narrow to meet space requirements for the Ward-Garcia Lines Corporation. Reconstruction, at a cost of about $2.5 million will involve removal of the old pier shed and deck, widening of the pier to 135 ft and building of a one-story cargo shed.

Preliminary designs for the reconstruction and integration of Piers 13, 14, 15, as the Belgian Line Terminal have been developed. Pier 13, privately owned, will be widened as soon as the city can acquire title, and enlarged bulkhead platforms will be constructed between the three piers, all for an estimated $4 million.

• **East River**—The future of the East River waterfront indicates a general face lifting of the area from Broad to Jackson Streets. The Department of Marine and Aviation plans construction of six wide modern general cargo piers; one semi-marginal type general cargo berth; marine terminals for distribution of building and construction materials and fuel, and rehabilitation of those existing piers which are in good condition.

South of Brooklyn Bridge, finger piers constructed at right angles to the bulkhead line can provide adequate berthing accommodations for modern cargo ships between the presently established Federal bulkhead and pierhead lines.

North of the bridge, however, the axes of the piers must be placed at about 45 deg to the bulkhead line to provide adequate berthing length within the pierhead limits.

Construction of a $6 million rectangular general cargo pier with 500 ft sides and an outshore face of 410 ft has been recommended. The pier will have a one-story shed 460 ft by 360 ft, with a 100 ft area inshore of the shed and with 25 ft aprons outshore and to the sides.

The creation of a $1.6 million mechanized banana handling terminal is contemplated for Pier 9, which is presently occupied by the U. S. Coast Guard, (which will get a new marine basin at the Battery).

The Standard Fruit Company desires to lease Pier 9 since their operations are out-growing their present Pier 13 terminal.

The pier is a concrete-decked facility 580 ft long by 140 ft wide. Preliminary plans contemplate the construction of a one-story shed and the installation of special fruit-conveying equipment.

The Gulf Oil Corporation and the department are planning to expand the seaplane landing and anchorage facility and the marine moorings at 23rd Street, East River, and construct an over-the-water, three story parking garage at a cost of about one million dollars.

Under this development, bulkhead and marginal area parking facilities are to be made more efficient and attractive—a benefit to the adjacent heavily populated areas.

Millions Earmarked for Montreal Improvements

Canada will spend $57 million on storage and cargo handling facilities to prepare Montreal for the opening of the St. Lawrence Seaway.

Under the program $27 million is slated for grain elevators, $17 million for work on wharves and pier, $7.5 million for dredging, $5 million for transit sheds.

DELIVERING WATER CHEAPER

Side-boom tractor lowers a length of steel pipe into position, ready to be permanently joined with Dresser Couplings, in this Tulsa, Oklahoma, project. Steel pipe and Dresser Couplings reduced jointing time greatly.

Trenches can be backfilled immediately with steel pipe and Dresser Couplings, thus minimizing amount of trench open at any time.

Dresser Couplings Speed Up Tulsa Water Main Installation

Rapidly growing Tulsa, Oklahoma, is solving its water distribution problems today and far into the future with new Dresser-Coupled steel mains. The latest addition to the city's water system is a 6½-mile main, 48" ID.

The 150-psi line runs through residential areas and crosses many existing water, gas and sewage lines, plus making 5 railroad, 5 arterial street, and 2 highway crossings . . . all presenting numerous installation problems. In spite of all these difficulties, the line was completed in 6 months. The Smith & Glade Construction Company, contractors on the job, credited Dresser Couplings with making this fast installation possible.

Because of Dresser Couplings, the completed line will resist surface loads and vibration, provide trouble-free service, and *deliver water cheaper* to the people of Tulsa for generations to come. Wherever water is needed, it pays to deliver it through steel pipe with Dresser Couplings. Dresser Manufacturing Division, Bradford, Pa. Sales offices in: New York, Philadelphia, Chicago, S. San Francisco, Houston, Denver. In Canada: Toronto and Calgary.

Using torque wrenches, installation crews made permanent, bottle-tight joints with Dresser Couplings in as little as two man-minutes per bolt.

ONE OF THE DRESSER INDUSTRIES

"65" PAYHAULER® hauls

4-ton rocks and ⅔-mile haul involved in Oregon road straightening job!

The wet, sticky clay in these pictures will give you an idea of the working conditions encountered by the "65" Payhauler operated by the Funderburk Construction Co., Sutherlin, Ore., on their 2-mile road job near Elkton. This clay cut machine efficiency on the job as much as an estimated 50%. Truck bodies had to be scraped clean periodically. And a bogged-down 1½-yd shovel had to be replaced by a sure-treading 3-yd International Drott TD-18 Skid-Shovel®.

In spite of these rough working conditions...and in spite of big 4-ton blocks of rock found in the clay...the International "65" Payhauler still maintained an average of 96 yds per hour on the ⅔-mile haul to the fill.

Veteran earthmover and Payhauler operator, Aaron Johnson, stated, "Here is the poorest loading material I've ever seen. Still I'm getting six 16-yard loads each hour over a cycle distance of 1⅓ miles."

Don't let unexpected weather and resultant job-bogging clay, mud, or water hold up your off-highway hauling jobs. Consider these all-weather, all-condition Payhauler advantages: proper weight distribution with 71% of total load on "95" drive wheels...74% of total load on "65" drive wheels; ample power from turbo-charged diesel engines with built-in fuel savings up to 10%; maximum power-transfer efficiency of International's long-lasting cerametallic-faced clutch; and load-matched gear ratios for smoother, faster selection of the right gear for every grade...every road condition.

Rock, bigger than 3-yd Skid-Shovel bucket, found in wet clay cut operating efficiency. Payhauler body, fabricated from abrasion-resistant high-tensile steel, together with strongest frame in its class, stands up to tough punishment of rock loading.

INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

96 yds per hour

of job-bogging sticky clay!

Double-acting hoist cylinder in all stages with 106,300 pounds of force in first stage raises body in seconds. Hydraulic snubbing action prevents undue stress on hoist cylinders and "gentles" body return to frame.

International Drott TD-18 Skid-Shovel replaced 1½-yd shovel to load clay, big boulders into "65" Payhauler. "65" gives you big, bonus-producing 18-ton capacity, Model "95," 24 tons.

International trio...TD-18 Skid-Shovel, TD-24 tractor and Model "65" Payhauler promote production for Funderburk Construction Co., in spite of wet, sticky clay and big, stubborn rock.

ONLY YOUR International distributor *can make this deal:*

Buy your job-sized 4-In-1 on tracks or rubber from a complete line of profit-producing rigs.

Now—why tie-up useful money or "strap" your credit by "over-equipping"? Why spend upwards of four times as much for several limited-duty machines which one 4-In-1 can replace—and outproduce?

An International Drott 4-In-1 gives you 4-machine usefulness for one moderate investment. Yes, the exclusive and revolutionary 4-In-1 gives you instant availability of 4 big-capacity machine actions!

You get world-beating Skid-Shovel excavating-

All-in-1 International Drott 4-In-1

"Carry-type scraper"

with "see-easiness" of front-mounting—to grade, strip, spread, or compact with amazing, inch-close accuracy!

Skid-Shovel...

with Drott's exclusive, "concrete-smashing," triple-power pry-action break-out—and 42° ground-level bucket roll-back!

-machine job-capacity
One-machine price!

loading performance. You get exclusive multi-purpose "carry-type scraper" action. You get production-boosting clamshell action. You get "radius-controlled" bulldozer action with big-yardage earth-rolling ability!

You get 4-In-1 versatility unlimited for a fraction of the price of the machines it can replace and outperform, on job after profitable job!

And you can have 4-In-1 advantages teamed with all-condition International crawler traction, or rubber-tired Hough Payloader speed!

See your International Distributor—he's the only one who can offer you a 4-In-1 deal! He's the only one who can save you the thousands of dollars that 4-In-1 ownership assures—by giving 4-machine utility for one moderate investment. And he can prove the "heap of difference" in 4-In-1 performance on tracks or rubber—against anything else in the field! See him soon for a demonstration!

-1 gives you...

Clamshell...

that "surrounds" loose materials and fills in one fast gulp—gives you "hopper-high," self-cleanout dumping action.

Bulldozer...

with clam lip up, and skid shoes on the ground, the radius-controlled blade rolls the earth with precision!

3½ CUBIC YARD MIXER
MAXIMUM CAPACITY
4½ CUBIC YARD AGITATOR
4 CUBIC YARD MIXER
MAXIMUM CAPACITY
5¼ CUBIC YARD AGITATOR
5 CUBIC YARD MIXER
MAXIMUM CAPACITY
6½ CUBIC YARD AGITATOR
5½ CUBIC YARD MIXER
MAXIMUM CAPACITY
7¼ CUBIC YARD AGITATOR
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8½ CUBIC YARD AGITATOR
7 CUBIC YARD MIXER
MAXIMUM CAPACITY
8 CUBIC YARD MIXER
MAXIMUM CAPACITY
10½ CUBIC YARD AGITATOR
8½ CUBIC YARD MIXER
MAXIMUM CAPACITY
11¼ CUBIC YARD AGITATOR
9 CUBIC YARD MIXER
MAXIMUM CAPACITY
12 CUBIC YARD AGITATOR
CERTIFIED BY THE TRUCK MIXER MANUFACTURERS BUREAU TO COMPLY WITH ITS STANDARDS FOR TRUCK MIXERS AND AGITATORS AS APPROVED BY THE N.R.M.C.A.
UNLESS RATED LOWER ON THE MANUFACTURER'S DATA PLATE

Your choice is complete

New standards provide a size of truck mixer for every condition and need

On May 1, 1957, the above ratings were established as standard for truck mixers and agitators.

With these 10 sizes (3½ to 9 cubic yards as mixers, (4½ to 12 cubic yards as agitators) it is possible for every user to realize the maximum payload potential of today's trucks consistent with his own requirements and the conditions and weight laws under which he operates.

Note that truck mixer ratings have been simplified by eliminating the former system of both "rated" and "guaranteed" capacities. Only a "maximum" capacity is now given. This maximum capacity corresponds to former "guaranteed" capacity without change in the drum volume requirements which have been used, proven and officially accepted for nearly four years (since September, 1953).

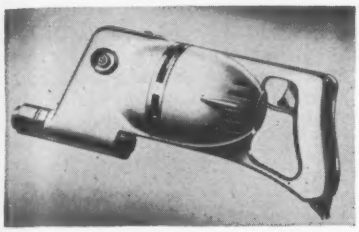
Replacement Plates, Printed Standards

Owners of truck mixers carrying Bureau rating plates of 3 - 3½ and larger sizes may now replace them with new plates obtainable, without cost, from the Bureau.

Copies of the new standards, which also include more exacting requirements for mixing time, water measuring tanks and pumps, are offered to architects and engineers who help to maintain these high standards by writing them into their concrete specifications. Please address your request to the TRUCK MIXER MANUFACTURERS BUREAU, Munsey Building, Washington 4, D. C.

Member Companies

BLAW-KNOX CONSTRUCTION EQUIPMENT DIV.
Mattoon, Ill.
CHAIN BELT COMPANY
Milwaukee, Wis.
CHALLENGE MANUFACTURING CO.
Los Angeles, Calif.
CONCRETE TRANSPORT MIXER CO.
St. Louis, Mo.
CONSTRUCTION MACHINERY CO.
Waterloo, Iowa
THE JAEGER MACHINE COMPANY
Columbus, Ohio
THE T. L. SMITH COMPANY
Milwaukee, Wis.
WESTINGHOUSE TRANSIT MIXER DIV.
Indianapolis, Ind.
WHITEMAN MANUFACTURING CO.
Pacoima, Calif.
WILLARD CONCRETE MACHINERY CO., LTD.
Lynwood, Calif.
WORTHINGTON CORPORATION
Plainfield, N. J.



Portable Electric Drill Good for Heavy Work

A lightweight, electric drill weighing 7¼ lb is designed for heavy duty drilling, cutting and chiseling. Called the "Modern Electric Slugger", the hammer can drill a ⅞ in. diameter hole in concrete, one in. deep in 30 seconds, according to the manufacturer.

A quick change chunk enables the hammer to handle any of 40 different tools.

Any electric outlet may be used to supply the power required for operation. MODERN MFG. CO., EDGEMONT & CLEMENTINE STS., PHILADELPHIA, PA.

New Ripper Works Outside Width of Wheel and Blade

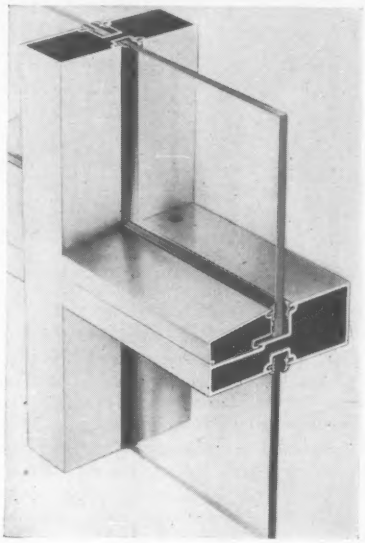
Designed for use when necessary or advantageous to rip outside of the width of the wheels or cutting width of the blade of a motor grader, a new ripper is said to cut the time and cost factor to a considerable degree.

The tool is said to effectively rip asphalt, hard pan, stratified rock, shale, adobe and concrete of reasonable thickness. Principle uses are for curb cutters, terraces and sloping banks, as well as tight places and hard-to-get-at angles.

The tool is now being manufactured in two models for use with a No. 12 Caterpillar Motor Grader. SWANSON MFG. CO., SAN DIEGO, CALIF.

Glass Framing System Features Narrow Stiles

Slender, extruded aluminum stiles and plastic seal form a new building front and wall system called "Narrow Line." It gives more glass area for display than heretofore and allows flush glazing on all sides of the glass pane.



Stiles are only 1¾ in. wide and 4½ in. deep. For large glass areas and heavy wind loads the vertical supports can be reinforced with steel inside the stiles.

Strips of vinyl are squeezed between glass and supporting frame by roller in half the time it takes to putty. The plastic seal is neater in appearance than putty, more resilient to pressure, water tight and maintenance-free.

Framing members of the system can hold glass straight or at angles and can support panels of other type materials.

Channels in the mullions drain moisture to a slanted exterior sill where the water is passed off.

Framing sections can be shop fabricated or assembled at the site. Structural parts come in 21 ft lengths or cut to order. KAWNEER CO., NILES, MICH.

Spreader Box Places Material Fast

The Model 90 Jersey Spreader has been announced as a companion to larger models which have been used on major projects for many years.

Specifically designed to handle smaller paving jobs, the unit may be used with tractors equal in size and power to the Cat D4, D6; Allis-Chalmers HD6, HD9 and International TD9 and TD14. Hooking up is said to be simple.

The Model 90 will spread in widths from 9 to 12 ft., and has a maximum spreading depth of 12 in, a minimum of 1 in. TRACTOR SPREADER CO., HASBROUCK HEIGHTS, N. J.

Machine Turns Out Block In a Continuous Process

A continuous-process block machine uses a drum-chain arrangement to produce double-cavity, "Cavitex" concrete block, of high strength and density. Cores and end plates attached to the continuous chain move under a feed hopper to join stationary side plates and dividing blades in forming four block molds.

Length of the block facing is seven times its height. Block can be produced in either 4 or 8 in. widths and with either a plain or striated finish.

In operation, a power bucket is filled at floor level with sand and cement. (*New Products continued on page* 80)

(Continued from page 79)

The bucket lifts and tilts into a mixer that mixes the material dry. Coloring, if desired, and water is added, and at the proper consistency the material is chuted into the hopper.

When the molds are filled, they pass through a packing head where the mix is compacted by hammer-like impacts. After the mold assembly moves through a finishing trowel, the blocks are picked off the chain by a power fork and placed on a transfer rack for curing.

Each Cavitex plant is independently owned and managed under a protective franchise that has been issued by the manufacturer of the machine. W. E. Dunn Mfg. Co., 302 W. 24 St., Holland, Mich.

Asphalt-Patching Mixer For Quick Maintenance

Designed for use with asphalt cements, cut-backs, emulsions, or tars, the new HTD Mixer No. 8 is now available with or without a 200-gal. asphalt supply tank.

The manufacturer points out that the machine is large enough for many resurfacing jobs as well as for all types of pavement patching. The machine has a mixer capacity of 8 cu ft and the aggregate bin is marked for volumetric measuring. Low pressure burner and power-driven asphalt pump and counter are also included. Equipped, the unit weighs 3,800 lb., is 124 in. long and 82 in. wide. McConnaughay Mixers, Inc., Lafayette, Ind.

Flooring Compound Resists Heavy Wheel-Load Wear

"Sternite" is a new flooring material compounded for use as a floor topping in areas where high-speed hand and power trucking traffic cause breakup of floor surfaces.

The topping is applied in a ¼ in. layer over concrete and is said to form an extremely hard surface that will not depress under wheels and eliminates all wheel drag.

Sternite is dark brown in color and is claimed to be nonslip, nonporous, lightweight and wear resistant.

It is furnished in 250 lb units ready for mixing. The material is composed of a liquid emulsion, cement and a flinthard aggregate and is said to withstand loads of 3,000 psi after 48 hours. The Monroe Co., Inc., 10703 Quebec Ave., Cleveland 6, Ohio.

Designs Can Be Varied In New Movable-Wall System

All part dimensions of an interior movable wall system, called "Horizon", are based on a 4 in. module, so that the walls can be fitted to any building configuration and to allow variation in decorative design.

Replaceable panels are available in aluminum, wood, plastic, steel and glass, and all in a variety of color and surface finishes. Panels are removable on either side of the partition and interchangeable with other panels of any material, color, or texture.

Ducts are built into the wall section for easy installation of utility services.

The movable wall is said to need little maintenance and only occasional washing to retain the original appearance. It can be disassembled for reuse elsewhere. E. F. Hauserman Co., 6800 Grant St., Cleveland, Ohio.

Bottom Track Roller Needs No Lubrication

A bottom track tractor roller containing tapered roller bearings has a permanent lubricant sealed in at the factory. It is claimed to reduce friction and hence, conserve tractor horsepower. The one-piece shell is tempered to a specific hardness for wearing qualities.

The roller is adapted to most Caterpillar, Allis Chalmers, International and Oliver tractors. Hensley Equipment Co., Inc., 800 Peralta Ave., San Leandro, Calif.

Hydraulic Backhoe Approv For Use with Tractor Model

The Henry hydraulic backhoe—Super C-10H—has been approved for use with the International Harvester 130 Tractor. It sets its main frame on the earth, putting the entire digging weight on the ground rather than on the tractor. The frame is operated hydraulically.

The boom swings in a continuous 160 deg arc; it makes 9 ft of ground contact. Sixteen bucket sizes, ranging in width from 12 to 38 in., are available. Henry Manufacturing Co., Inc., 1700 N. Clay St., Topeka, Kan.

Backhoe Attachment Has 9,000 lb Breakaway

A smaller and less expensive version of its Major Power Digger has been introduced by Sherman. The new Model 54F backhoe attachment is for installation on Ford Model 85D rubber tired industrial tractors.

The company claims a 9,000 lb. breakaway capacity for its digger, which has a 12 ft reach below grade, 18 ft at grade. It can be equipped with shovels from 12 in. to 36 in. width; swing is 188 deg. Hydraulically controlled stabilizers spread 8 ft.—Sherman Products, Inc., Royal Oak, Mich.

now, in contractor tools, too,

if it's Remington, it's right!

Peak operating efficiency ensured by direct gear transmission.

Hoisting eye provides quick, easy way to move trowel from floor to floor.

Model TG4 Power Trowel. 2½ hp., 4-cycle, 1 cylinder, air cooled gasoline engine; dust and moisture proof magneto, adjustable governor; available with 26" ring (TG4-26) or 36" ring (TG4-36).

12 outstanding features make the TG4 the most efficient power trowel ever designed!

These twelve features make the Remington TG4 Power Trowel by Mall the most advanced on the market. Hundreds of contractors already know it as the finest performing, easiest to handle, most versatile gasoline driven troweling machine they have ever used. Here are the twelve features. Compare them with other makes!

1. **Powerful 4-cycle, air cooled, 2½ hp. gasoline engine for fast, steady finishing.**
2. **Direct gear transmission delivers 97% of power to blade. No slipping belts to steal valuable power and reduce efficiency.**
3. **Lifting eye for raising or lowering machine from floor to floor.**
4. **Automatic recoil starter—fast, easy—no lost rope, no waste of time.**
5. **Exclusive! Quick-kick pitch adjustment ring. All three blades adjust at once. No bending—just a kick of the foot does it!**
6. **Low center of gravity design for easy operation.**
7. **Centrifugal clutch—engine disengages at idling speed. Promptly engages as engine speed increases.**
8. **Reversible shoes and blades of high-grade steel. Both edges can be used, giving double wear!**
9. **Extra strong ⅝" diameter, solid ring in 26" and 36" sizes.**
10. **Clamp ring for switching to a replacement engine in seconds. No belts, nuts or bolts to bother with!**
11. **Safety throttle control. Release handle and ring stops, engine idles. No stalling—no restarting necessary.**
12. **Floating disc attachment to smooth dry tamp floors (minimum water content) and grinding-grouting head to dry grind or wet grout concrete floors can be quickly and easily mounted in blade arm sockets.**

Only the Remington TG4 by Mall has all these advanced, time-saving features! And the TG4 is built with the quality and precision that have made Remington famous for 141 years in sporting firearms and ammunition.

For full information about the complete Remington line of Mall contractor and industrial tools, including concrete vibrators, earth augers, circular saws and many others, just send the convenient coupon.

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COMPANY_____

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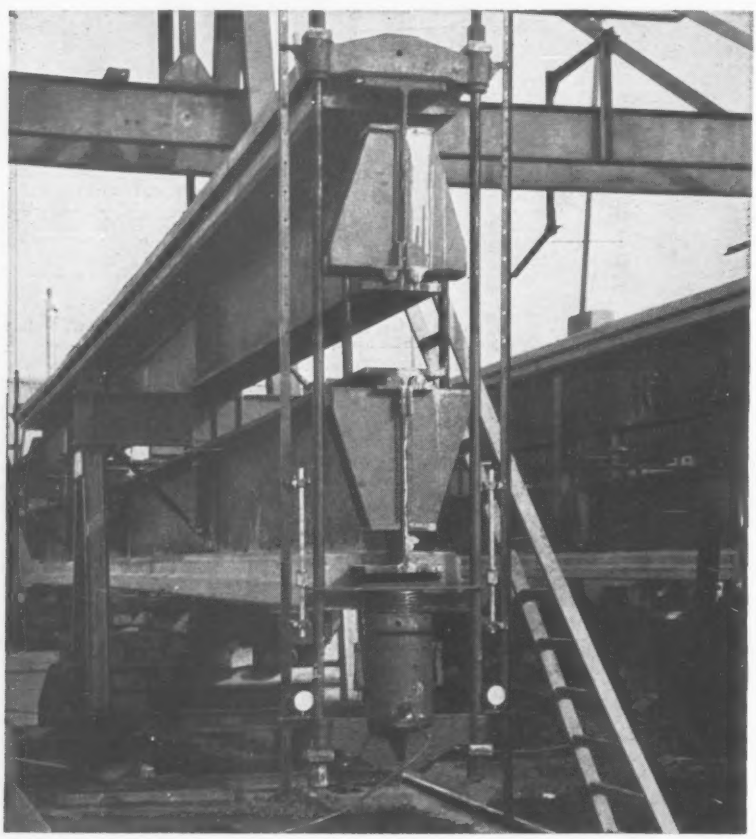
CITY_____ ZONE_____ STATE_____

Concreted Tension Flange Saves Steel

NEW-TYPE COMPOSITE BEAM has prestressed concrete bottom flange. Reinforcing steel and bond bars (arrow) are welded around tension flange of its steel section.



HYDRAULIC JACKS bend two beams at a time to prestress the tension flanges. After the concrete has cured for 7 to 14 days, bending is relaxed, putting the concrete under a high compression.

A new type of composite beam—rolled section of high yield point steel with a concreted tension flange—has been developed in Europe and used there for bridge and building construction. It is now available under franchise in this country. The beam permits a significant saving of steel because higher working stresses are allowed in design.

In the "Preflex System", as it is called, a standard steel section is bent in a fabricating shop and its tension flange is encased in concrete. After the concrete has reached a suitable compression strength, the beam is released from bending. The steel section remains within a fraction of the bending deflection and at the same time puts the concrete around the tension flange under a high compression.

The composite beam has a greater stiffness than the rolled section because the prestressed concrete around the steel tension flange remains in compression under all dead and live-load conditions.

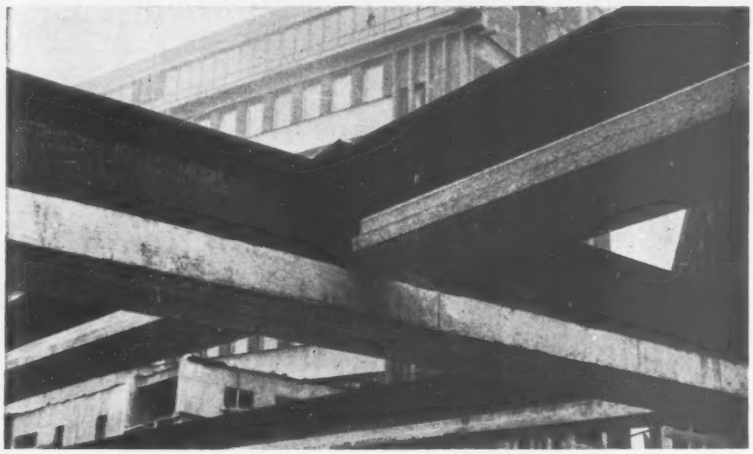
• **Advantages**—At a 20% cost increase, the steel used in the Preflex beam presents yield points above 50,000 psi, more than 50% higher than low-carbon steel.

Because each beam has been tested during the preloading to the maximum anticipated work load in service, and since the margin of fluctuation of stresses in the steel under live load is greatly reduced, thereby reducing the possibility of fatigue failure, it is claimed that unit stresses used in design could safely be based on 0.7 of the yield point rather than 0.6.

As an example, a Preflex beam made of steel with a yield point of 51,200 psi can be designed with unit stresses of 35,000 psi, a gain of about 50% over the allowable for standard-grade steel in concrete-encased beams.

Furthermore, for a given span, live load and maximum deflection, a Preflex beam has a shallower section than any other type, the developers claim.

• **Possible objects**—The inability of concrete to follow the elongation of the steel when tension stresses exceed 14,000 psi is not a problem when a Preflex beam is used. Future loading of a Preflex beam will relieve the concrete of the induced compression. At most, the concrete will be subjected to very little tension, never to the point where tension cracks are a danger, the Preflex Co. reports.



CONNECTIONS between floorbeams for the Chaleroi Hospital, Belgium, are conventional, since the concreted flange ends well short of the beam ends.

The possibility of creep is considered during design. The modulus of elasticity adopted is not the instantaneous value, but that of the concrete after it has undergone most of its creep. In any case, for the Preflex beam, the compression stresses in the concrete decrease as the load increases, with the result that in service the compression in the prestressed concrete falls to a level where the amount of creep is almost negligible.

• **Stress transfer**—The theory of how stresses are transferred to the concrete has not yet been fully established. It is felt that the bond between the concrete and steel flange is the main factor. Until this is proved to be so, special precautions are taken.

Bars are welded to the bottom of the steel flanges to help the bond between concrete and steel. These bars are horseshoe shaped and their number and spacing varies with the magnitude of the stress transferred.

That stress is dependent on the section and length of the beam and on the length and cross section of the concrete.

• **Fabricating the beam**—The beams are fabricated to individual order in outdoor plants. Before the beams are flexed, reinforcing steel and bond bars are welded to the tension flange to be concreted. Hydraulic jacks bend two beams simultaneously. Depending on the type of concrete that is being used, the bending is not relaxed before 6 to 14 days.

Concrete mix proportions by volume are 2: 3: 6 with a water-cement ratio of 0.24. The concrete has a compressive strength of 6400 psi at 14 days. Sometimes, high-early strength cement with a compressive strength of 6,800 to 7,400 psi at 6 or 7 days is used. Cubes of concrete are tested before the beams are released from bending to assure the strength of the concrete.

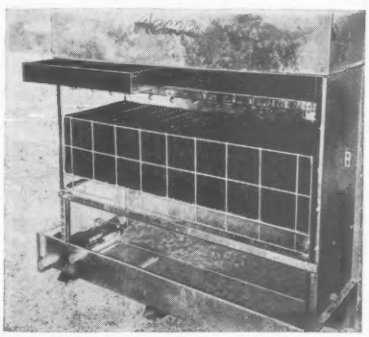
The beams can be transported by trailer trucks without danger. A fabricating plant can be set up at the construction site if a large number of beams is to be fabricated.

The Preflex Co. of Belgium is the developer of the composite beam. Leon G. Rucquoi, 30 Rockefeller Plaza, New York 20, N. Y., has the franchise for the licensing and development of the Preflex system in the U. S.

Rot-Proof Plastic Baffles Used in New Cooling Tower

Polystyrene plastic baffles, incorporated in a new series of "Flow-Mizer" cooling towers, are claimed to provide corrosion-free and rot-free evaporating surfaces that have a long service life and reduct maintenance and cleaning operations.

The baffles are held in a drawer-type mounting that can be quickly slid out and removed from the tower for inspection and cleaning. The baffle unit is light in weight, the plastic reputedly saving up to 90% of the weight of equivalent steel baffles.



The plastic baffles are available in cooling towers ranging in capacity from 20 to 200 tons. ACME INDUSTRIES, INC., JACKSON, MICH.

Portable Seismograph Is Designed for Many Uses

A new portable seismograph, developed by the University of Cambridge, England, now is available in the U. S. Known as the Watts Willmore Pattern Seismograph, it records for up to 24 hour at 60 mm per minute.

It is designed for a variety of geophysical applications including blast recording, rockburst studies, study of earth shocks related to volcanic activity, teleseismic work, plus other applications within the construction and petroleum industries. Among construction field applications is the determination at proposed construction sites of subterranean vibrations and stresses to which a structure or foundation may be subjected.

The seismometer unit, made by Hilger & Watts, Ltd., is sealed in a waterproof case that permits burial in open ground, and is convertible from horizontal to vertical operation.—JARRELL-ASH CO., 26 FARWELL ST., NEWTONVILLE 60, MASS.

600 hp Off-Highway Truck Carries 40 Ton Payload

A 600 hp diesel rear-dump truck for off-highway use has been developed by Autocar.

The truck features speeds up to 33 mph and is designed for 40 ton payloads.

Designated the AP-40, the truck is primarily designed for mining, quarrying and construction fields, has planetary gear rear axles and is more than 13 ft high, 31 ft 10 in. long. It is equipped with a 27 cu yd body and is powered by a V-type, 12 cyl diesel engine used previously only in locomotives. AUTOCAR DIV., THE WHITE MOTOR CO., EXTON, PA.

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on rising costs..... with

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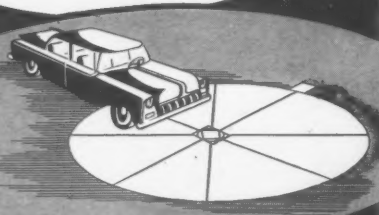

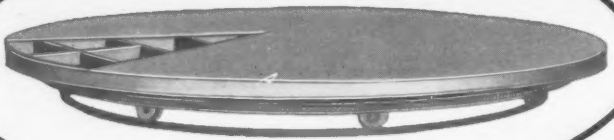

Shlagro Stock Steel Turntables are economical . . . **custom-built** from **stock design!** You can choose Shlagro for every "turning operation", because Shlagro Turntables are engineered to suit any size or job requirement.

The outstanding revolving efficiency of Shlagro Stock Steel Turntables is provided by a sprocket chain drive, coupled to a heavy-duty electric motor or manually-controlled assembly. Center bearings are designed for radial or thrust loads. Shlagro Turntables are easy to install and require little maintenance . . . available with "Safety Non-Slip" Checkered or Plain Floor Plates.

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- ☐ #500 — STOCK STEEL RIGID FRAMES
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- ☐ #650 — NO SHELL PRE-CAST FIREPROOF REINFORCED CONCRETE COLUMNS
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SOMERVILLE, MASS.

Publications

Scaffolding erection—Installation and operation of "Gold Medal" Safety scaffolding machines are described in a 16 page bulletin that includes on-the-job photos and drawings showing how to install outrigger I-beams on bar joists, pan joists and other types of construction for bricklaying, demolition and other operations. PATENT SCAFFOLDING CO., INC., 38-12 12TH ST., LONG ISLAND CITY 1, N. Y.

Metal Lath Fire Ratings—Fire-resistive ratings for metal lath and plaster used in steel and wood construction are listed in Technical Bulletin No. 8 in chart-like form, indicating the materials required to establish specific ratings for columns, steel beams, floors, partitions and walls. METAL LATH MANUFACTURERS ASSOCIATION, ENGINEERS BUILDING, CLEVELAND 14, OHIO.

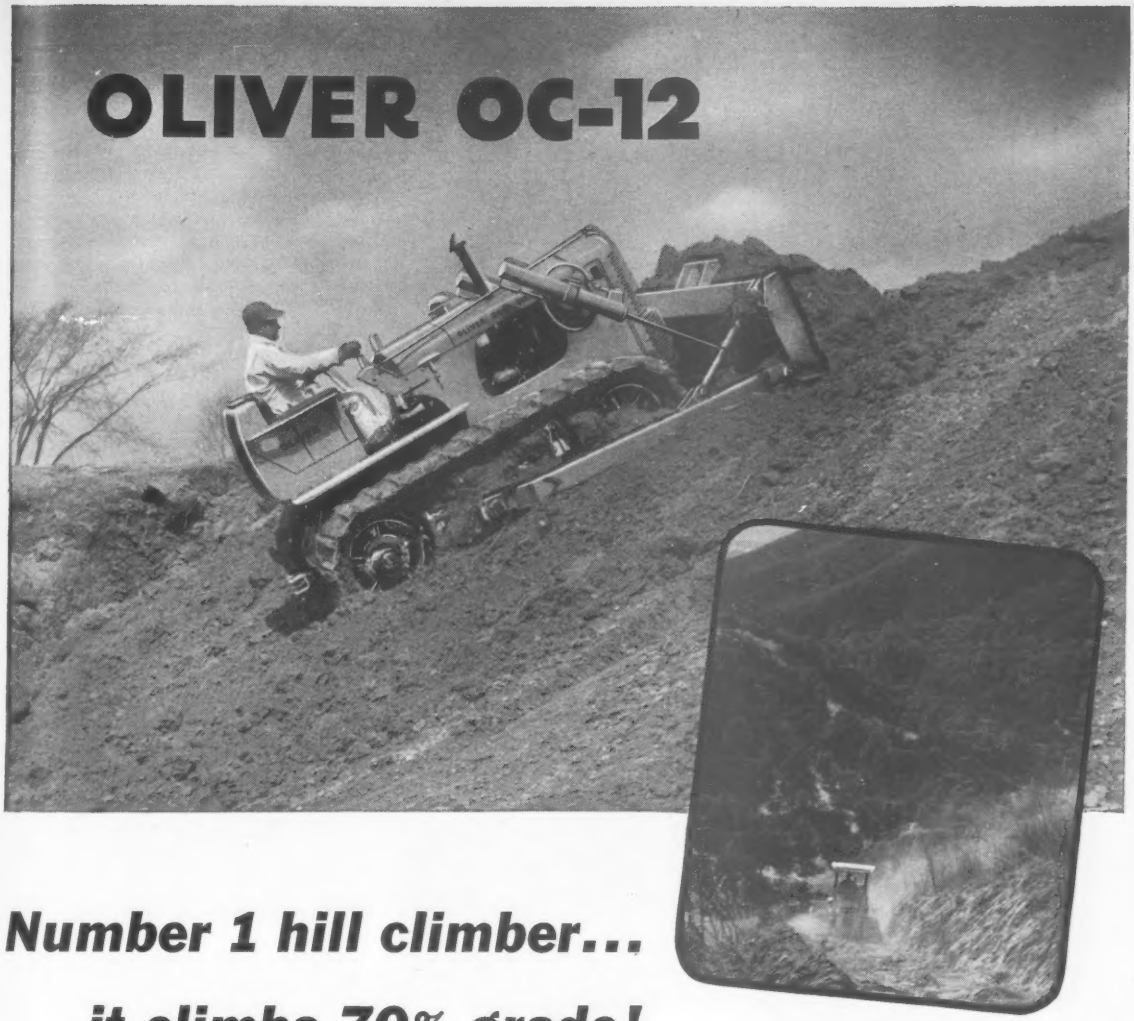
High strength steel—A folder describes the chemical composition, mechanical properties, fabricating practices for cold forming and rolling limits for manganese-copper steel, which offers high strength, resistance to abrasion and fatigue, plus moderate formability and weldability. ADV. 773, REPUBLIC STEEL CORP., ADVERTISING DIV., 3100 E. 45TH ST., CLEVELAND 27, OHIO.

Uses of aluminum—An 18 minute color film illustrates aluminum's color and texture possibilities for designers, architects and engineers and its uses in appliances, architecture, automobiles and apparel. The film is in 16 mm sound, with a 35 mm color negative available from the MOTION PICTURE SECTION ALUMINUM CO. OF AMERICA, 1501 ALCOA BUILDING, PITTSBURGH 19, PA.

Marble production and use—The history of marble, uses of marble in architecture of the past, present and future, its production and some physical characteristics are given in a 52 page illustrated publication, "A Story about Man and His Search for Beauty." CARTHAGE MARBLE CORP., BOX N612-E, CARTHAGE, MO.

Joint sealers—A 4 page catalog lists various types of Weatherban sealers for sealing curtain walls, building panels and expansion joints and gives data on surface and joint preparation, application procedures and sealer properties. Drawings illustrate suggested minimum and maximum sealer-joint sizes, methods of sealing and structural sections of curtain-wall panels. ADHESIVES AND COATINGS DIV., MINNESOTA MINING

OLIVER OC-12



Number 1 hill climber... it climbs 70% grade!

This OC-12 in actual work conditions pioneered grades up to 70% in poor-traction soil... handled steep road building assignments.

Of course, you don't *work* at 70% grades! But top honors for the Oliver OC-12 at a recent hill-climbing competition prove that you have the correct power-to-weight ratio that means top tractor performance *wherever* your job takes you.

Here's balanced performance at its best...plus a whole set of advanced features to give this eager crawler its outstanding work and pioneering ability.

Oliver design gives you high, unobstructed clearance. You go *over* mud, stumps, rocks, etc. Even the final drive housing is close to the track frame and protected—not out in the open where it could pack up in deep going.

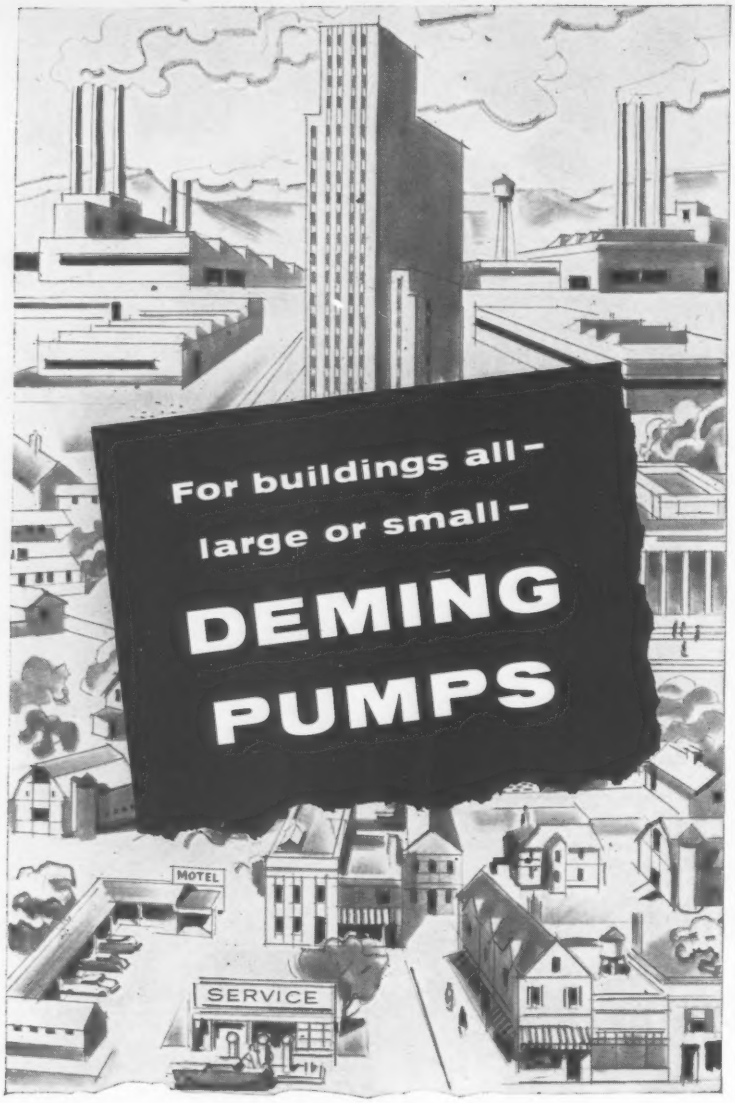
With Oliver POWER-TURN you get full-time working power, even on turns. You make short turns—but *always* with two-track power and complete control. This means straight-line working advantages all the time. What's more, steering procedure never changes, regardless of grade...uphill or down. No clumsy cross-hand steering ever. Works with full line of attachments. High-torque 53 d.b.h.p. diesel; also gasoline model.

Check out this modern crawler yourself. Ask your Oliver distributor for a demonstration or write for important new catalog.

THE OLIVER CORPORATION

400 West Madison Street, Chicago 6, Illinois

a complete line of industrial wheel and crawler tractors and matched allied equipment



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Horizontal and vertical centrifugal pumps, air conditioning pumps, sump pumps, sewage pumps, high pressure pumps, boiler feed pumps, condensation return units, vertical turbine pumps, jet pumps, submersible pumps, power driven reciprocating or plunger pumps, and others are included in the big Deming line.

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Curing concrete—The use of sisalkraft paper blankets for curing and protecting concrete is explained in an 8 page booklet that also includes results of comparative tests on various curing materials. Text and photos illustrate the advantages of sisalkraft. Tables on sizes and shipping weights of sisalkraft blankets are also given. Curing and Protecting Concrete Highways. American Sisalkraft Corp., Attleboro, Mass.

Fluorescent Lighting—A 52 page catalog on commercial, industrial and recessed fluorescent lighting equipment contains price data, detailed drawings and photographic illustrations on lighting fixtures, stem sets and hangers, aluminum troffers, economy units and parts and accessories. Smithcraft Lighting, Chelsea 50, Mass.

Treated timber poles—A handbook devoted to timber poles and their uses contains data on the service life, recommended preservatives and treatments, working stresses and wind load tables for pressure-treated poles. Also discussed are utility lines, highway lighting and structural properties of poles. American Wood Preservers' Institute, 1410 S.W. Morrison St., Portland 5, Ore.

Prestressing concrete—The applications, methods, advantages, history and development of the Prescon system of prestressing concrete, as well as a chart of sizes and clearances for end anchors and an example of tendon size determination is given in two folders from the Prescon Corp., P. O. Box 4071, Corpus Christi, Tex.

Concrete finishes—Properties, uses and methods of application of Vitricon cold-glazed concerte finishes are outlined in a 4 page brochure that includes specifications, test data and color reproductions of Vitricon applications. Vitricon, Inc., 26-02 First St., Long Island City 2, N. Y.

Automatic door equipment—Two catalogs contain descriptions, photos, drawings and suggested specifications for Prest-o-Matic electric industrial door units and fire-door operators and Prest-o-Matic cold-storage door assemblies. Clark Door Co., Inc., 515 Hunterdon St., Newark 8, N. J.

Aluminized steel products—Bulletin tells advantages of aluminum-coated steel building products and shows typical installations of roof decking, roofing and

siding, rolling doors and roof ventilators. Bulletin No. P. O. 5656. ARMCO STEEL CORP., MIDDLETOWN, OHIO.

Diamond Blades—A pocket guide arranges concrete and masonry materials in relation to diamond blade life so that selection of the proper blade and its relative efficiency can be made quickly. CONSOLIDATED DIAMOND TOOL CORP., 32 YONKERS AVE., YONKERS, N. Y.

Back-hoes—Performance data and capabilities of various models of Davis backhoes are outlined in a 6-page folder that includes illustrations and explanations of equipment features of the machines. MID-WESTERN INDUSTRIES, INC., 1009 S. WEST ST., WICHITA 15, KAN.

Valveless filter—Action and features of the Permutit automatic valveless filter for water-treatment plants are described in an 8-page illustrated bulletin. The filter operates on loss-of-head principle, with the entire operation taking place hydraulically and change of flow direction accomplished by atmospheric pressure. THE PERMUTIT CO., 330 W. 42 ST., NEW YORK 36, N. Y.

Sewage treatment—A 4 page illustrated bulletin describes features and operation of the Dorr-Oliver SpiroVortex system for complete treatment of domestic sewage (ENR May 2, p. 53). Bulletin 7314. DORR-OLIVER, INC., BARRY PLACE, STAMFORD, CONN.

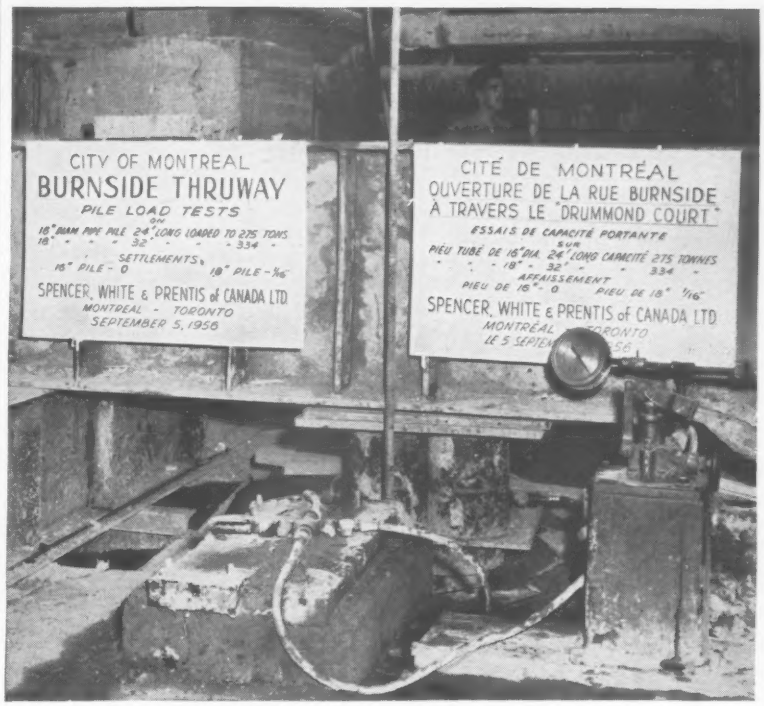
Forms for concrete ceilings—Brochure describing design details, features, erection procedure, sizes and rental service for Steeldome concrete-ceiling forms is available from Ceco Steel Products Corp., 5601 W. 26 St., Chicago 50, Ill.

Partition systems—Sound transmission loss, fire ratings and erection and material specifications for each of seven different partition systems are given in a 20 page manual. Methods of attaching studs to floor and ceiling, and collateral materials to studs are illustrated. Included are tables detailing required spacing of supports and maximum heights for various constructions. Penn Metal Co., Inc., 40 Central St., Boston 9.

Floor and wall tiles—Matico's specification book gives numbers, names, color, dimensions and packing data, including tile size and thickness, number of pieces, square feet and weight per carton for each of the company's tile products. Specifications for correct adhesives for each tile, data on feature strip, edging strip and cove base are also included. Mastic Tile Corp. of America, Newburgh, N. Y.

ANOTHER PROBLEM SOLVED BY SPENCER, WHITE & PRENTIS

NOTEWORTHY LOAD TEST IN COMPLEX PILE-DRIVING JOB



Project: **Alteration of Drummond Court for new roadbed.**
General Contractor: **J. P. Cartier, Ltd., Montreal, Canada.**
Engineers: **Surveyor, Nenninger & Chenevert, Montreal, Canada.**

Our Canadian affiliate performed this work, the purpose of which was to alter a building to permit a street to pass through. More than a hundred piles were driven, 33 of them indoors with limited headroom.

Under these difficult conditions, the load test results (see photo above) were as follows:

Net settlement, 16-inch pile—0″
Net settlement, 18-in. pile—1/16″

Though these particular results are exceptional, they do come out of a general background of *consistently* high standards in complex pile-driving work.

On request, we will be glad to tell you about the experience, the methods and the specially-built equipment which we have available for dependable handling of your pile-driving problems.

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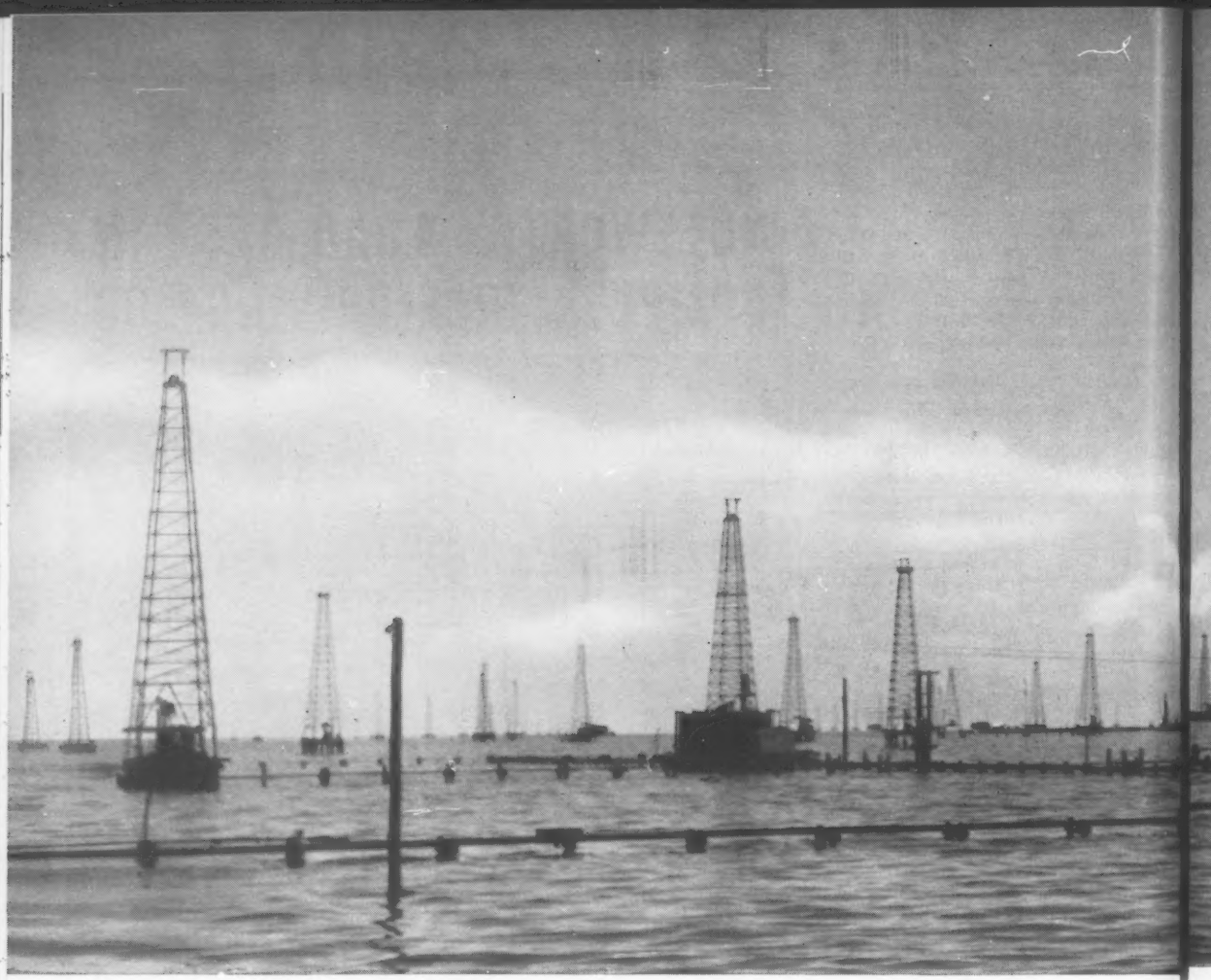
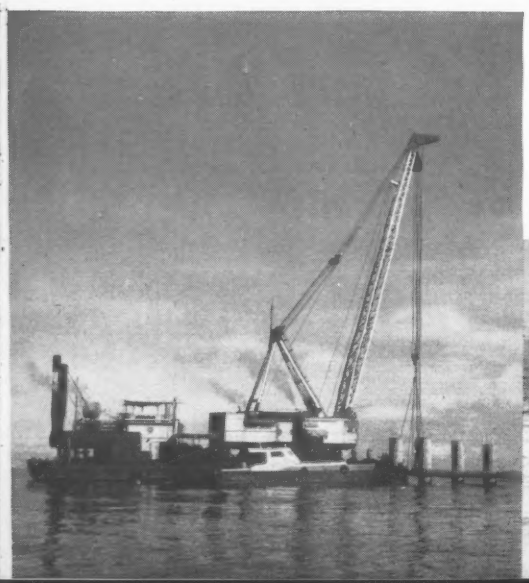


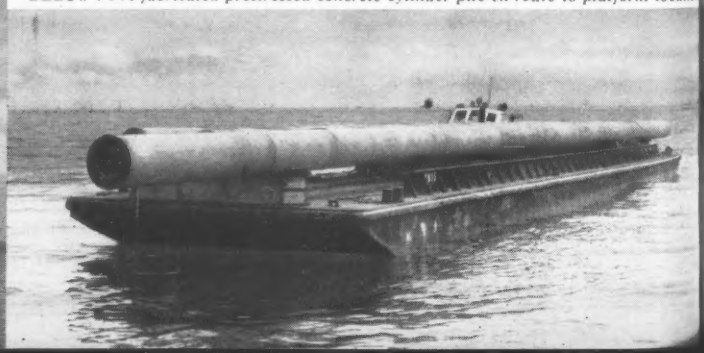
RAYMOND'S important role

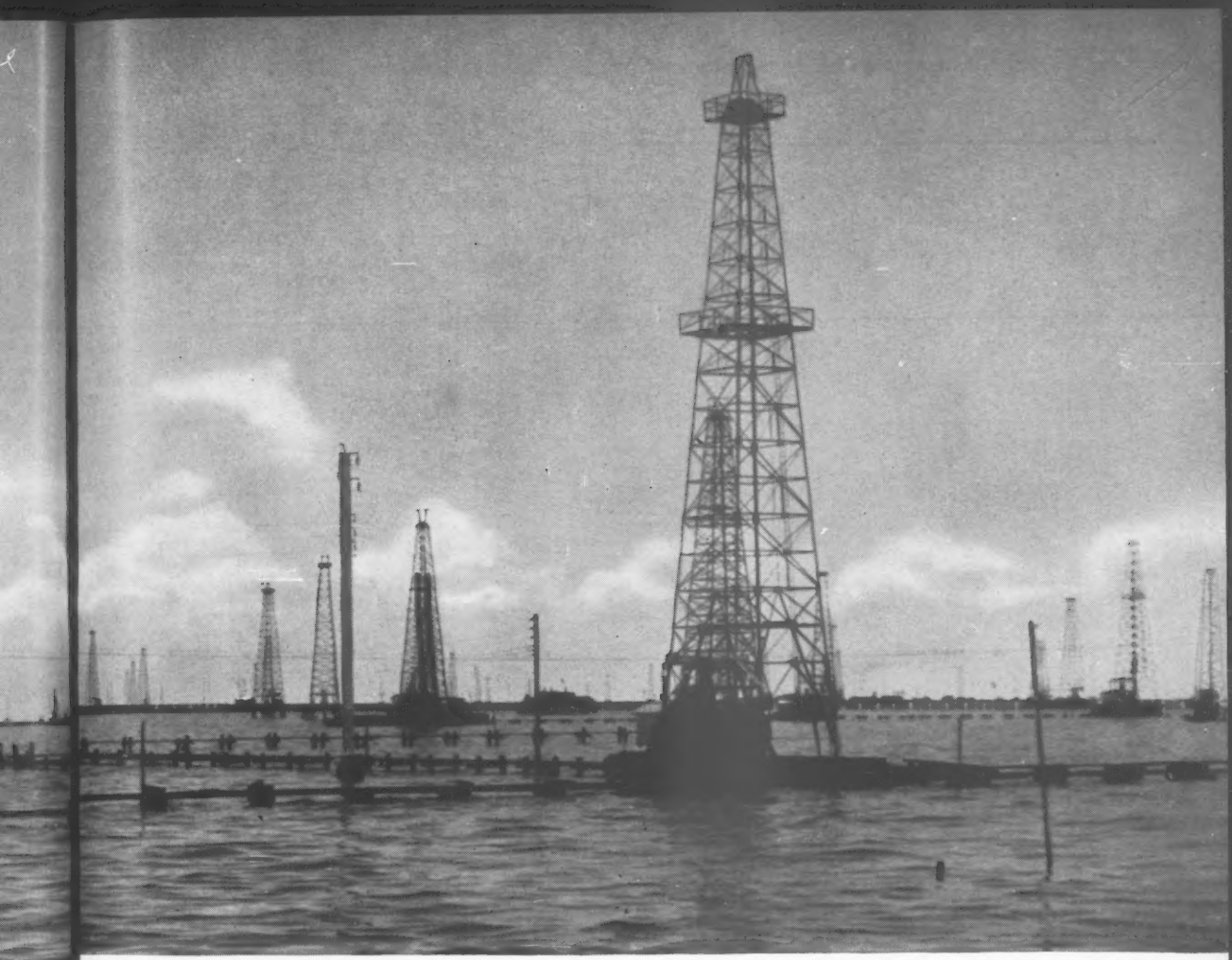
Development of Prestressed Concrete Cylinder Piles a boon to oil companies on Lake Maracaibo



LEFT: Giant floating rig in action at job site.

BELOW: Pre-fabricated prestressed concrete cylinder pile en route to platform locati





in the great "Oil Rush" of '57

Not since the days of Spindle Top has the world seen such an oil boom! At Lake Maracaibo, Venezuela, offshore rigs are springing up in amazing numbers, and the swish and thump of pile drivers fill the air. At this impressive, industrious exploration and drilling site, such oil giants as Shell, Mene Grande, Signal, Superior, Sun and San Jacinto have turned to Raymond to provide derrick platform foundations. The reason: Raymond's revolutionary Prestressed Concrete Cylinder Pile. This, the latest foundation development in our 60 year history, assures complete protection against the corrosive properties of Lake Maracaibo. In addition, Raymond Cylinder Piles offer greater structural strength, increased load capacities and longer life. And, thanks to a unique assembly line process, the manufacturing of cylinder piles at the job site saves time and money.

Raymond Cylinder Piles are manufactured in a series of sections placed end-to-end, which are joined by post-tensioned cables of high tensile steel wire. The sections are then grouted to form a homogeneous, impervious support of extraordinary strength and durability. To meet the demands of the new contracts, we are expanding our cylinder pile manufacturing yard, which is located right at the job site. When completed, this yard will be the largest of its type in the world!

For over 50 years, Raymond has served the oil industry, and since 1926, we have maintained a permanent office in Venezuela. You will find Raymond foundations supporting offshore drilling rigs, tanker wharves, cat-crackers and storage tanks just about everywhere oil is drilled and refined. May we also serve you?

FOUNDATIONS FOR THE STRUCTURES OF AMERICA... COMPLETE CONSTRUCTION SERVICES ABROAD

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OUR 60th YEAR

C. D. CURTISS
Commissioner of Public Roads

F. C. TURNER
Deputy Commissioner

G. M. WILLIAMS
Assistant Commissioner—Engineering

The Line-up:

Key Men in BPR's New Setup

When Congress passed the multi-billion-dollar highway program last year, it was apparent that the Bureau of Public Roads needed to streamline its operations in order to carry out the program. The result was a major reshuffle with the emphasis on shifting decision-making authority from Washington to the field.

Now, with the exception of minor changes left to be made in the Washington office, the decentralization program of BPR has been accomplished. And, it is producing results.

Actually, the bureau began working on a reorganization program even before the Highway Act was passed. District offices were reshaped in January of 1956, regional offices by September of last year, and the Washington reorganization became effective on January 23 of this year.

Designed to spread the work load and save on manpower, Secretary of Commerce Sinclair Weeks says, "The net result will be to relieve the Washington headquarters and regional offices of many time-consuming details which would otherwise require a considerable expansion of staffs."

Basically, the shift leaves the Washington staff free to set policy and trouble shoot. But, it also serves in a consulting capacity for the field when problems can't be settled on that level.

Under the new setup, the actual operation of the road program centers in the field. Washington decides on the basic location of the interstate system of roads, but from there on it is up to the field to make the other decisions. They can, for example, decide on the final detailed location of the roads, approve all phases of the primary, secondary and urban roads—including their location—okay state programs for specific projects and make formal project agreements with the states—this reserves federal funds to cover the federal share of the cost of the project.

Although the field offices have the authority for making most of the decisions, when problems get knotty states and cities can always appeal to Washington. And, they are doing just that. Right now, the bulk of the appeals to Washington involve highway locating says the bureau. But questions on stockpiling construction material and other matters are also being tossed to Washington for the final say. As the program builds up, however, the bureau expects to have less and less of the field problems brought to it.

Here is how the field was reorganized. Former division offices that divide the U. S. and Alaska into 10 sections are now called regional offices. Under this come division offices located in each state (these were formally district offices). States are further divided into districts, and districts broken down to areas. Previously, the breakdown of states was into regions and areas.

The basic concept of the new organization is to give decision-making authority to engineers within their responsible areas, then each office can tap the next higher office for assistance or consultant help. For example, a district engineer has the primary responsibility for all phases of the broad areas of highway design, construction, and maintenance in his district. Also, he has the initial responsibility for review and recommendations pertaining to program and system matters within his district.

District engineers can go to the division for help, and the division can turn to the region for assistance. Regions go to Washington on matters they can't settle.

Here is how Washington has been realigned to back up the field. Head of highway program under the Secretary of Commerce is Bertram D. Tallamy, Federal Highway Administrator. It is his job to formulate the basic policies and programs of the bureau. In addition, the administrator is the buffer between Congress and other government agencies and the highway program.

Under the Federal Highway Administrator is the Commissioner of Public Roads, C. D. Curtiss. The commis-

A. C. CLARK
Assistant Commissioner—Operations

J. C. ALLEN
Assistant Commissioner—Administration

E. H. HOLMES
Assistant Commissioner—Research

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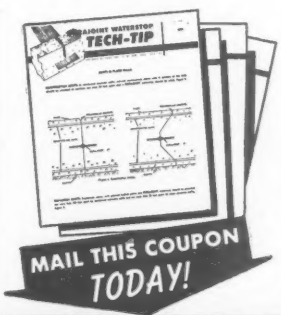
We have prepared, in conjunction with various testing companies, a series of factual, technical reports on the subject of waterstops. These Technical Reports cover the many aspects of adequate concrete joint design and should prove to be a valuable addition to your design files. Although these reports are strictly technical information and not sales catalogs, they conclusively prove that DURAJOINT and DURASEAL PVC Waterstops are the only waterstops on the market that will produce a practically 100% watertight joint. Check the coupon below for your free copies of these Technical Reports. Why not mail it now while you are still thinking about it?



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- ☐ **TECHNICAL REPORT NO. 3**...DURAJOINT Tests and Test Results by the U. S. Testing Company, Inc.
- ☐ **TECHNICAL REPORT NO. 4**... Hydrostatic Pressure Tests on DURAJOINT and other Waterstops.
- ☐ **DURAJOINT** "Tech-Tip" Series.
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DEPT. 16

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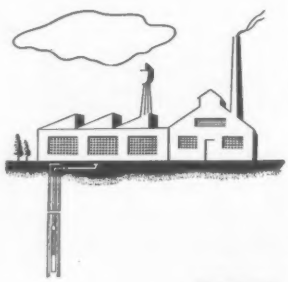
SUMO SUBMERSIBLE PUMPS!

A SUMO Submersible pump is a time-tested method of deep well pumping which is as modern as tomorrow. Its advantages are simplified installation, freedom from operating troubles, minimum maintenance and—above all—efficient utilization of power.

The SUMO design features a submersible electric motor coupled directly to the pump. The entire unit operates completely under water. Installation simply requires attaching the unit to the discharge pipe, lowering it into the well and hooking up the power supply.

Think what it means. No pump house to protect power source—controls and pressure tank go anywhere. Narrow or crooked wells present no problem—no long drive shafts, bearing spiders or alignment problems. There's no noise or vibration, no adjustments or priming. And the SUMO unit can't freeze or flood out, is safe from heat, dust and tampering.



Maintenance is equally simple. Only minimum servicing is needed. Completely interchangeable spare parts are available nationwide. There's no better way to insure a reliable supply of water.

WRITE FOR BULLETIN B1000. It contains information on operating details, capacities and installation.

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SUMO SUBMERSIBLE Water Pumps

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sioner directs and controls the execution of the bureau's programs, including field operations, in accordance with established policies of the Federal Highway Administrator and the Secretary of Commerce.

Under the commissioner is the Deputy Commissioner, F. C. Turner. Turner is the principal operating aide to Curtiss. He assists in directing the operations of the bureau and such other jobs as Curtiss assigns to him.

Under the deputy commissioner are four offices—Engineering, Operations, Research, and Administration—headed by assistant commissioners.

Handling the bulk of the work for the highway program is the Office of Engineering headed by Assistant Commissioner George M. Williams. Virtually all phases of federal-aid roadbuilding fall within the Office of Engineering except research. It includes the programming, design, construction and maintenance of the roads. The Office of Engineering is further divided into special sections that deal with specific phases of the program. There are, for example, a section that works on right-of-way acquisition, bridges and tunnels, construction and maintenance.

Heading the Office of Operations is Assistant Commissioner A. C. Clark. Within this office come the projects built entirely with federal money such as forest highways, roads and trails in national parks, as well as civil defense, foreign and the Inter-American Highway. Within the Office of Operations is also the newly established Office of Developments that scouts out new materials and methods of building, including the use of electronics to speed highway work.

Riding herd on spending for the highway program is the Office of Administration headed by Assistant Commissioner J. C. Allen. Within this office come such items as budget and management, personnel, program analysis, and audits and accounts.

Research activities for the new highway program are handled by Assistant Commissioner E. H. Holmes. Within the Office of Research come the job of preparing and disseminating technical data, statistics, general highway information and the development of legislative requirements to effectively carry out the bureau's various research programs. The broad areas that fall within the Office of Research are financial and administrative research, highway transport, hydraulics and drainage, physical research coordination, and publications and reports.

(*M&J continued on page 94*)

NEW

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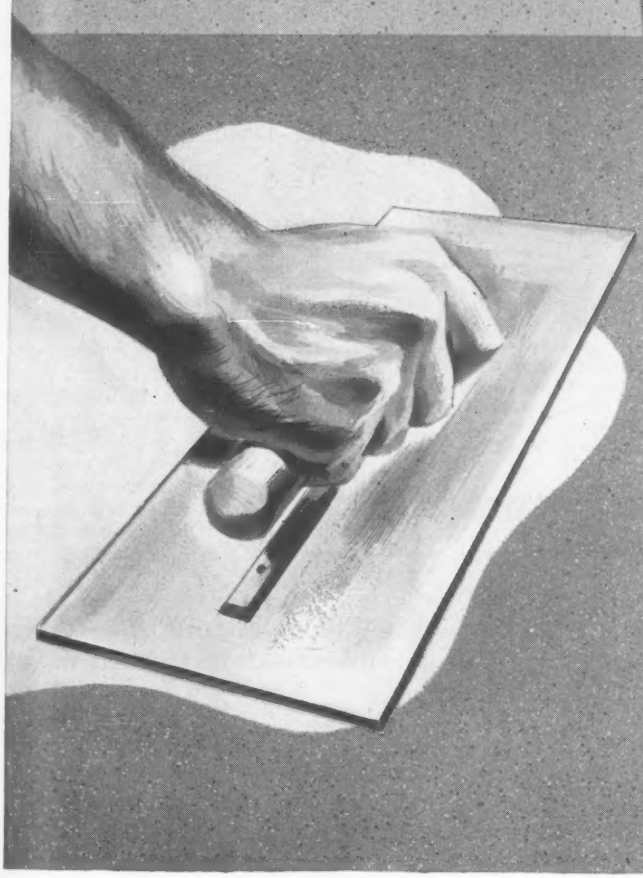

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FOR

Remote Control Jobs on a great variety of Construction Equipment

Adaptability to all sorts of mechanical situations explains, in large measure, the wide-spread use of TRU-LAY PUSH-PULLS on tractors and their accessories, power shovels, winches, road graders, road oilers, dump trucks, snow plows, engine-driven pumps, rock crushers and other construction equipment.

These dependable Push-Pulls are used for the remote control of hydraulic and air valves, brakes, clutches, transmissions, throttles, chokes, governors, power take-offs, and many other applications.

TRU-LAY PUSH-PULLS are precision products, not gadgets. They provide positive remote-action whether anchorages are fixed or movable . . . for light loads or loads up to 1,000 lbs. . . . and they are effective over short or long distances, up to 150 feet or more.

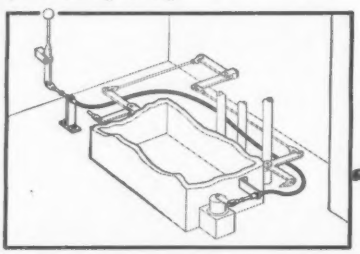
TRU-LAY PUSH-PULLS are dependable and accurate even under the most adverse conditions

They perform effectively under extremes of heat or cold . . . from jet engine temperatures to 70° below zero F. The inner, working member (lubricated for life during assembly) is fully protected by the tough, flexible conduit. Abrasive dusts, dirt and moisture are sealed out. Fittings are cold-swaged to make them integral parts of the control unit. It is a matter of record that we have never heard of a TRU-LAY *flexible* PUSH-PULL wearing out in normal service. Use of these versatile, simple and rugged controls increases ease of operation and means the virtual elimination of maintenance.

Advantages of Tru-Lay Push-Pull flexibility and simplicity are pictured below

Simplicity vs Complexity

Compare the TRU-LAY PUSH-PULL cable in illustration with the mechanical linkage. PUSH-PULLS are simple, have but one moving part, are noiseless and give lifetime service accuracy. Linkages are complex, made of many parts; they wear at many points. Their use brings increased backlash, lost accuracy and vibration rattles.



"Solid as a rod but *flexible* as a wire rope" is a good description of TRU-LAY PUSH-PULL REMOTE CONTROLS. This flexibility makes it possible to snake around obstructions . . . permits the ideal arrangement of all control elements . . . greatly simplifies installation of controls by reducing the number of working parts . . . damps out noise and vibration. Versatile, accurate, adaptable, rugged . . . they are the ideal remote controls for construction equipment.

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. . . Men and Jobs

Executive Officer Appointed For Penna. Highway Bureau

Raymond F. Campbell has been appointed executive officer of the Pennsylvania Department of Highways, as a part of a general reorganization plan that was announced several months ago.

Mr. Campbell, at present district engineer at Hollidaysburg, is a registered engineer. As executive officer he will work directly under Secretary of Highways, Joseph J. Lawler, serving as his representative in the administration of the department and acting as coordinator between the secretary's office and the various divisions in the Central Office and the field. He will also act as engineering advisor to the secretary.

ASCE Official Retires After 27 Years Service

Allen P. Richmond, assistant to the secretary of the American Society of Civil Engineers, has retired after some 27 years of service with the organization's headquarters staff. He had developed the guidance activities in the society's engineering education program, and has been ASCE staff representative in Engineer's Council for Professional Development and to the Institute for International Development.

Mr. Richmond is credited with suggesting the use of point evaluation methods for college teaching positions. He is a BS graduate of Dartmouth and a CE from the Thayer School of Civil Engineering, where he taught for nine years.

Two Design Firms Merge As Nickum, Lamont & Fey

Two established Seattle architectural and engineering firms merged this month under the name Nickum, Lamont & Fey.

W. C. Nickum & Sons, commercial, industrial and marine designers, joined forces May 1 with Lamont & Fey, architects and industrial engineers. The Nickum firm will continue its marine work under the old name.

Lamont & Fey was established in 1940 as Loveless, Fey & Lamont. The Nickum organization was founded in 1925.

Careers

Business

Gilbert H. Mandeville has opened an architectural and engineering office, specializing in industrial and commercial design, under the name of Gilbert

Sidewalk Superintendent Looks at a Diggin' Rig

Next Time He Stops by, He'll See Start of Kansas City Apartment Project

portly gentleman looking down from the bank is seeing what many contractors call finest one-yard excavator on the market today.

a Marion 43-M, a one-yard shovel and a 27- crane. Mounted on rubber, it's a 35-ton k crane.

e, it is working on 26,000 cubic yards of ex- ation for an 86-unit apartment project in sas City.

ll find the 43-M on contractor jobs every- re, winning new friends because of features air control that helps an operator turn in a day's work, easy front-end convertibility that es it an all-purpose machine on contract jobs self-cleaning crawlers that permit travel and k in almost any footing.

r nearest Marion Distributor will be happy ll you and show you the full story about all of many quality features you'll find in the 43-M.

MACHINE	SHOVEL CAP. IN CU. YDS.	HOE CAP. IN CU. YDS.	CRANE RATINGS CRAWLER MOUNT MAX.* STABILITY	CRANE RATINGS CRAWLER MOUNT MAX. USABLE	CRANE RATINGS TRUCK MOUNT MAX. USABLE
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MARION 43-M	1	1-1¼	27T @ 10′	27T @ 10′	35T @ 15′
MARION 362	1½	1½-2	43T @ 12′	30T @ 15′	
MARION 87-M	Special Crane		150T @ 12′	75T @ 15′	
MARION 93-M	2½	—	80T @ 12′	50T @ 15′	
MARION 101-M	3	—	84T @ 12′	57T @ 15′	
MARION 111-M	4	—	110T @ 15′	105T @ 15′	

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It's terrific but the easy reshoeing feature especially appeals to me!

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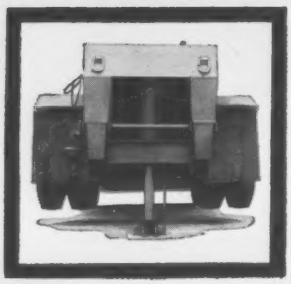
The New Remarkable

ROGERS DETACHABLE GOOSENECK



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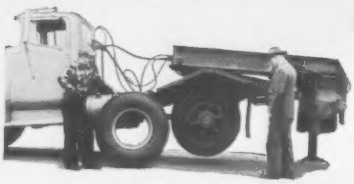

Hydraulically operated. Driven from power take-off or electrically from truck battery.

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Winchless operation saves up to 1000 lbs. and hundreds of dollars in cost.

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Operated by one man who sees and controls all operations from a single position on the gooseneck.

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Features permit new, fast, easy changing of trailer and truck tires.

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No pins, no wedges, no fifth wheel RAMP.

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Overhanging loads can be unloaded with new speed and ease. Simply raise the deck—put blocking under the load—lower the deck—detach the gooseneck and pull the trailer out.

Here is the lighter, lower priced, faster detachable gooseneck that combines every wanted feature *plus* exclusive Rogers advantages.

The simplified new principle lowers the weight, reduces the cost and attains operating advantages heretofore unknown.

Its manifold advantages, some of which are mentioned briefly here, make it a most desirable unit for *every* hauler.

Write or phone for illustrated literature giving complete information.

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H. Mandeville, Consulting Engineers, in Seattle, Wash.

Earl F. McSpadden, Jr., was named field project manager for the DuPont cellophane plant to be built near Tecumseh, Kan.

Kenneth I. Crosier has been appointed to the newly-created supervisory position of safety engineer for Kaiser Engineers of Oakland.

George D. Shropshire, Jr., chief engineer for Virginia's Richmond-Petersburg turnpike, has resigned to join the staff of D. W. Winkelman Co., general contractor in Greensboro, N. C.

Richard J. Metzger has been elected vice president of Metzger Construction Corp., Buffalo, N. Y., general contracting firm.

John A. Neale, chief engineer of the National Board of Fire Underwriters, was named this week to a second one-year term as president of the National Fire Protection Association.

Obituaries

George H. Petley, 86, who had been superintendent of construction for the Goodyear Tire & Rubber Co. at Akron for many years, died at Akron recently.

Charles Forwood, 83, retired contractor and former president of the Wilmington, Delaware Street and Sewer Department, died May 6 at Wilmington.

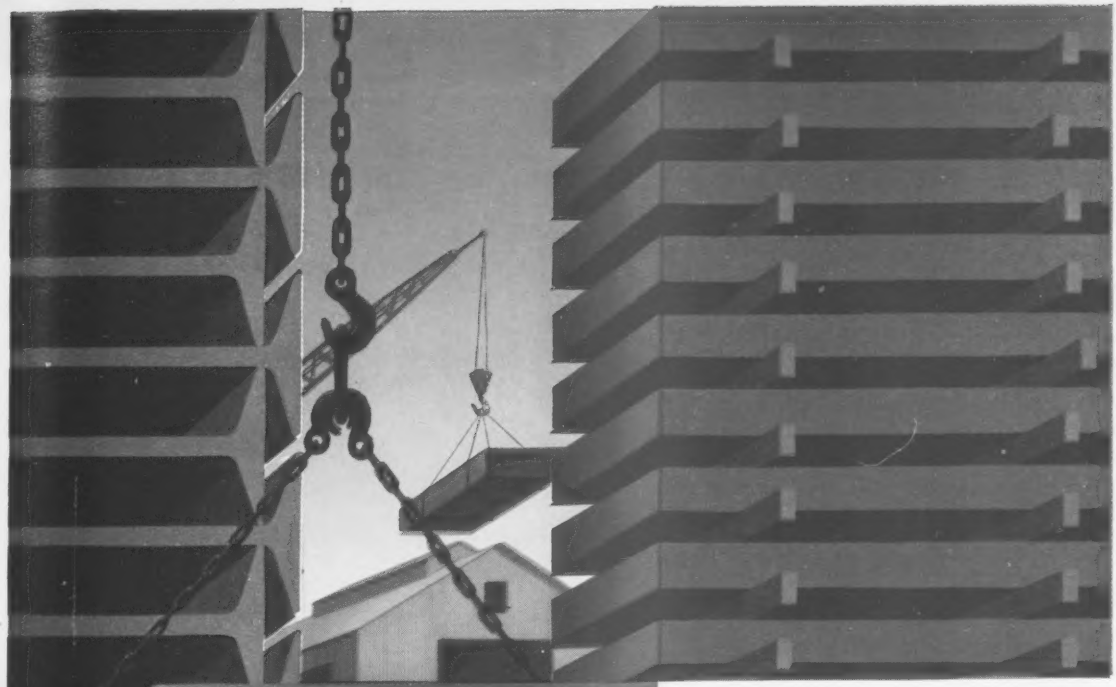
John C. Morrell, 45, partner in the engineering firm of Morrell, Kral & Zepf, Cincinnati, died recently in Frankfort, Ky. He received his engineering degree in 1934 from the University of Cincinnati.

Leonard H. Male, 60, senior sanitary engineer with the Public Health Service, died recently. Mr. Male had served as state sanitary engineer for Utah and also in private industry. At the time of his death, he was assistant regional engineer in the Kansas City regional office.

F. X. Thomas Berlinguet, 102-year-old engineer who participated in construction of the first power dams and hydroelectric plants in Canada died in Three Rivers, Quebec, in May. He retired from civil service 42 years ago, at the age of 60, to establish his own engineering practice.

Ira C. Jolly, 62, Kentucky professional engineer, and a member for more than 30 years of the Kentucky Department of Highways, died May 24.

Theodore G. Meyer, contractor, died in San Francisco on May 20. He was 65. Mr. Meyer entered the construction field in San Francisco in 1918. He was president of the contracting firm of Theodore G. Meyer & Sons.



New Facilities to do a better job for you

During the past six months Levinson has been undergoing a major expansion program designed to meet the increasing demands of its customers for plain and fabricated steel.

New warehousing facilities have been acquired in McKees Rocks, Pa. and the company is in the process of adding new, modern equipment for cutting and fabricating. All of this adds up to an even better job for Levinson customers.

On your next order for plain or fabricated steel

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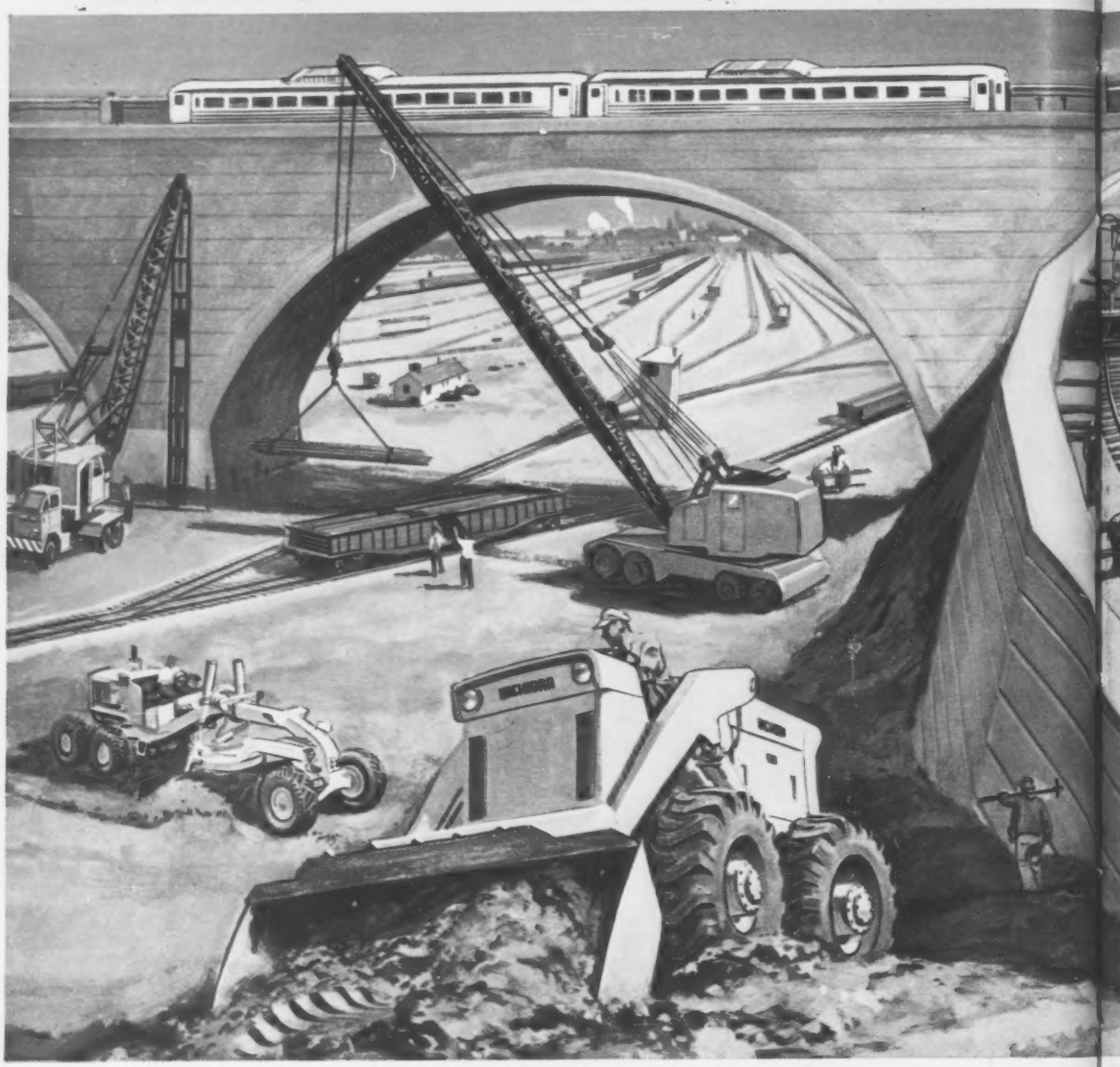
Which Diesel blazes



It's GM...used by over 150 equipment builders

Mechanized maintenance of way—both on- and off-track—has rapidly taken the place of "pick-and-shovel" methods on America's pace-setting railroads.

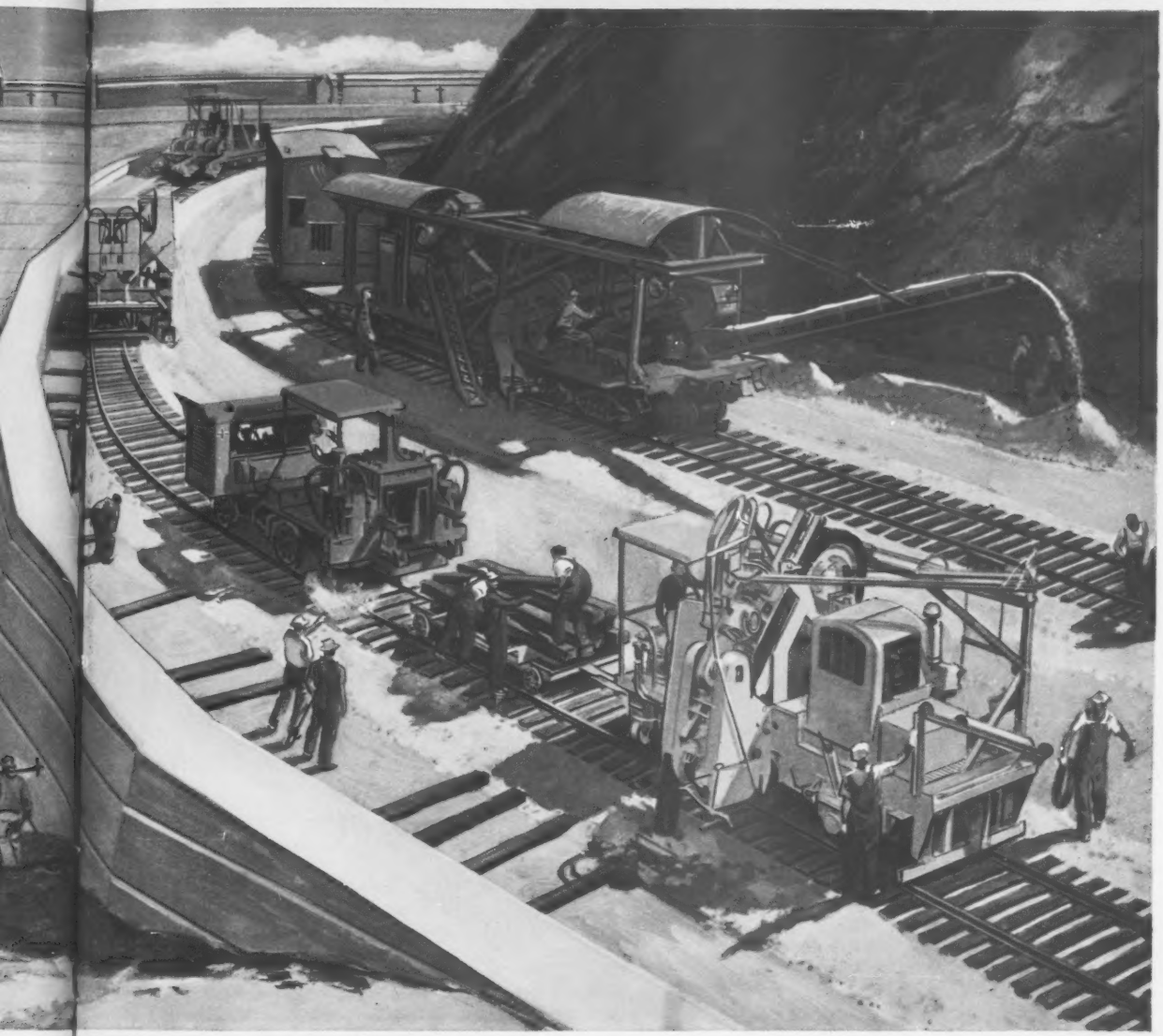
In the forefront of this development is the General Motors Detroit Diesel—little brother of the GM 2-cycle engine that powers many of the world's Diesel locomotives.

Railroads with a sharp eye on costs have found it pays to standardize on GM Detroit Diesels in all types of equipment—from portable air compressors to 250-ton rail cranes. In one size, GM Detroit Diesel engines power the spectacularly successful rail cars that are winning traffic back to the rails *profitably*. In another size, these rugged Diesels turn the generators which sustain below-zero temperatures in modern refrigerator cars.

In fact, GM Detroit Diesel engines are the world's most versatile Diesels—available in more than 1,000 applications of power machinery built by over 150 different manufacturers. We'll gladly send you the complete list.

Whatever your job, be sure to ask for equipment powered by GM Detroit Diesel. It's America's First Choice Diesel *because it does more work at less cost!*

es the trail on the rails?



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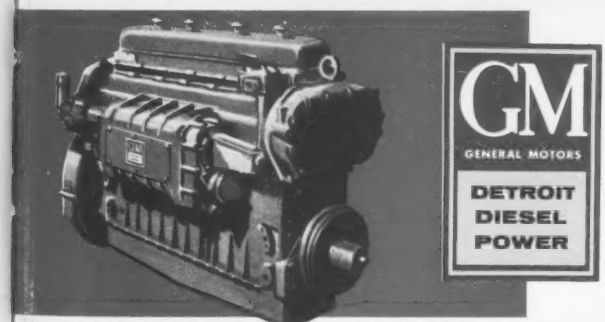

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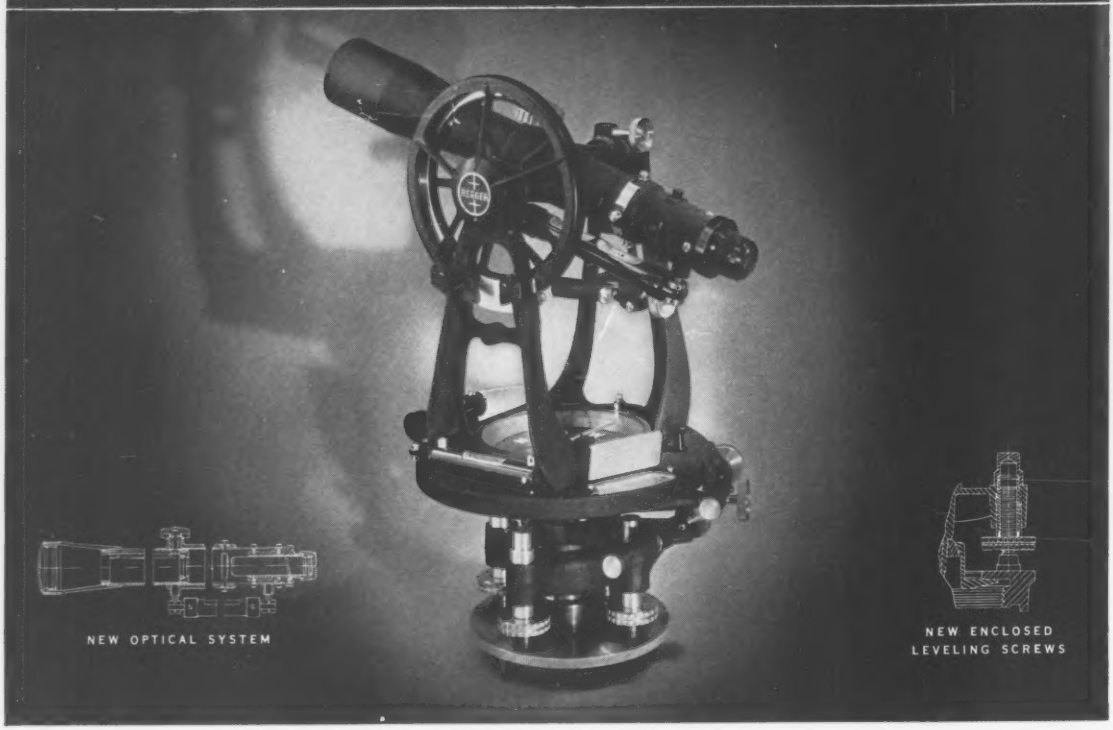

BERGER NEW BRONZE TRANSIT

Every now and then a product is developed which renders inadequate such overworked words as "quality" and "improvement." The new Berger Transit is just such a product. We believe it to be as fine an engineering instrument as expert design, skilled craftsmanship and superb materials can achieve.

You will observe, the first time—and every time you sight through its telescope—the clear, well-defined image—the precise stadia readings at greater distances made possible by its newly designed optical system. For example, the 6¼" Transit has a 26-power telescope with coated optics, a resolving power of 3½ seconds, effective aperture of 1.430 inches (36 mm.) and field of view of 1 degree, 6 minutes.

Smooth focusing is assured by the use of an integrated rear bearing and eye piece mount; the object is easily brought into sharp focus with a negative lens actuated by a fine rack and pinion, and with a slow, even motion.

Fully enclosed nickel silver leveling screws are precisely fitted into replaceable bronze bushings. The newly designed circle guard provides greater protection for the vertical circle and permits easy reading of the vernier. Non-reflecting finish of the compass plate reduces glare. Reversion vial is *standard at no extra cost*; choice of spider web or glass reticle.

These features added to the many other advantages for which Berger Instruments are recognized the world over, make this new model truly the "superb achievement of over 85 years of fine instrument making."

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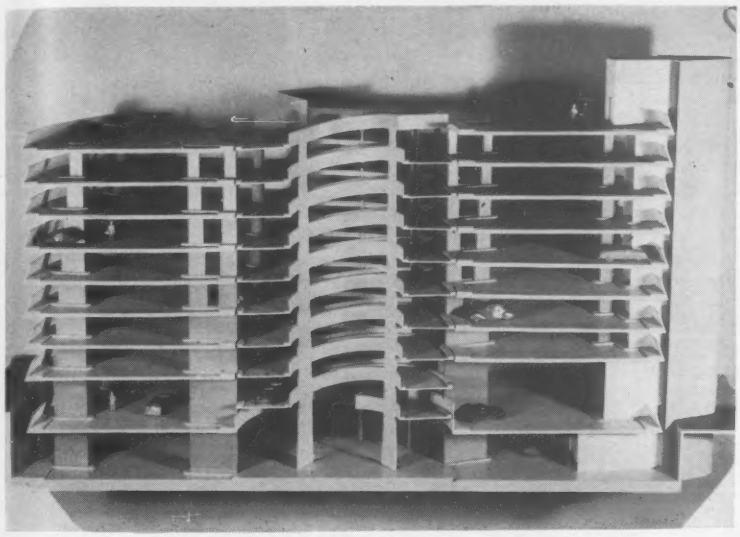
ENGINEERING AND SURVEYING INSTRUMENTS...SINCE 1871

Brazil Builds Novel Garages . . .



. . . Rio Starts a Circular One

Foundation work has started for a 7-story, off-street parking garage to be located in the Copacabana section of Rio de Janeiro, Brazil. The garage will have a total floor area of 218,654 sq ft and will park 698 cars.

Two ramps at the center of the circular building and one on the exterior will provide access to the spiralling floors.

The structure will cost about $1.0 million. Paulo Fragoso is the engineer for the reinforced concrete garage and Rino-Levo the architect.

ECAL Construction Co. is the general contractor.

. . . Sao Paulo Finishes Long, Narrow One

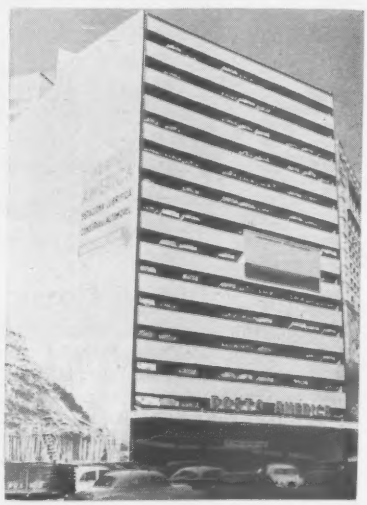
Completed and now in use, the first off-street parking garage built in Sao Paulo, Brazil, is a 13 story, steel-framed structure with a total floor area of 151,533 sq ft. It will park 498 cars.

The garage has entrances and exits on two streets. Car parking is facilitated by four elevators and two ramps with 15% inclines. It is equipped with a service station and will provide car pick up and delivery service.

The garage cost about $1.0 million. It was designed in steel by Paulo Fragoso to overcome construction problems caused by its steeply graded site.

Rino-Levo was the architect. Cavalcanti Junqueira Construction Co. was the contractor.

The immediate success of the garage and its acceptance by the public has started a wave of proposals for similar structures in other cities in Brazil.



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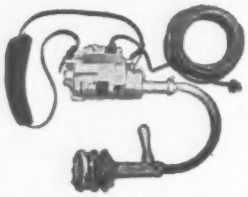
CONCRETE SURFACER
MODEL A



"Berg" equipment is used extensively for surfacing and finishing applications on concrete construction.

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The distinctive "BERG" features give you the kind of results that are realized in better quality work, combined with lower costs.

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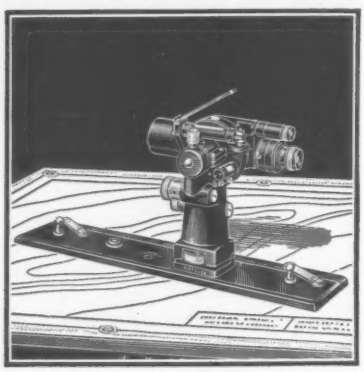

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For swift accurate field mapping and surveying, leading surveyors rely on the Watts Microptic Alidade. The Watts Alidade is highly accurate, compact, light weight, versatile and dependable. See the advanced-design Watts Microptic Alidade with exclusive pillar levelling at your nearby Dietzgen Dealer. Made by Hilger & Watts, Ltd., London; sold and serviced in the United States by the Eugene Dietzgen Co.

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DIETZGEN

Shipping Canals

A coastal cut for India; overland for Russia

Work is expected to start in June—before the monsoon season sets in—on a $21 million canal project across the Dhanushkodi peninsula, which almost joins the island of Ceylon to the mainland of India. The shipping canal will enable ocean-going freighters to pass from the Arabian Sea to the Bay of Bengal without skirting all around Ceylon as they are now doing.

The canal will connect the Gulf of Mannar to Palk Strait and have a series of locks to regulate levels which, during monsoons, fluctuate between the two bodies of water. The project includes a bridge across the canal and expansion of Tuticorin—on the Mannar gulf—into an all-weather port.

• **Russian canal**—From Vienna comes word of a 210 mi long Volga-Baltic Sea canal to handle passenger and freight vessels. The canal will go from the Baltic Sea, at Leningrad, to the middle-south part of the Volga River.

The new canal, which will feature three run-of-river power plants, will utilize small sections of the 150-year-old Mariinsk Canal built under Czar Peter. The complete project reportedly will entail moving 43 million cu yd of earth, of which 12 million cu yd already have been excavated.

Ecuador Hires U. S. Firm To Improve Highways

Ecuador has employed the firm of Rader & Associates, engineers and architects of Miami, Fla., to make an engineering and economic study of its 1,300 mi national highway system.

Using the consultants' report—scheduled to be finished by June—Ecuador will ask the World Bank for a loan of between $10 million and $15 million for immediate improvement of the roads and construction of new highways.

First New Bridge at Bordeaux Since 1821

Acquisition of right-of-way has begun at Bordeaux, France, for a bridge across the Garonne River which, when completed in 1962, will be only the second crossing of this stream at this major city. The first, and only existing, crossing is the Pont de Pierre, built on the order of Napoleon Bonaparte, and placed in service in 1821.

The new bridge will be a suspension structure with a 1,080 ft main span and 445 ft side spans. The towers will be of reinforced concrete 330 ft high. One will be located in the river about 450 ft from the left bank, the other near the right bank. This right bank rises 230 ft above the river while the left bank is quite low. The deck of the bridge will be 168 ft above high water.

There wil be a sloping approach on the left bank in two sections, first, 2,700 ft of steel spans followed by 3,900 ft of reinforced concrete spans. Joining the main approach viaduct there will also be a 1,000 ft long ramp connecting to a main boulevard.

The bridge roadway will be 40 ft wide, and, in addition, there will be a 5 ft bicycle path and a 5 ft sidewalk on each side.

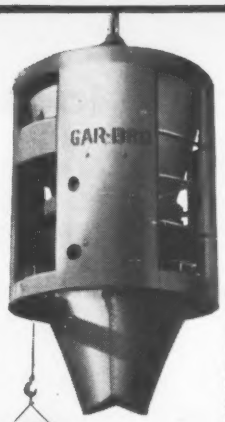
The existing Pont de Pierre carries 30,000 automobiles and 21,000 bicycles a day, and is a spectacular traffic bottleneck in this industrial city. The next bridge is 28 miles upstream at Langon.

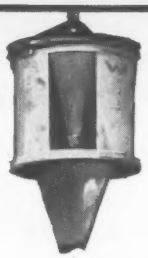
Copper Skin to Cover Concrete Dome

A thin-shelled concrete dome, soon to be built in Canberra to house the Australian Academy of Science, will be covered with copper.

The dome will be 150 ft in diameter, 35 ft high and 3 in. thick. It will be scalloped around the base and give the appearance of resting on marble-ribbed arches set in a circular pool surrounding the structure. Glass bubbles about 4 ft in diameter will pierce the roof as skylights.

Construction is expected to start in a few months. Grounds, Romberg & Boyd of Melbourne are the architects for the project.





ROUND CONCRETE BUCKETS

Select from 17 models of Gar-Bro Buckets ranging from ⅓ to 8 cu. yds. There are types for handling any concrete from normal slump to the driest low slump. All have Gar-Bro patented, self-closing, double clamshell gates—they are non-jamming and grout tight. Large buckets have air-operated gates with pull chain or remote control.

ACCORDION RUBBER HOPPERS (Patented)

Only Gar-Bro Buckets can be equipped with an Accordion Hopper. It is an exclusive patented bucket attachment that confines concrete when pouring into narrow forms. It fastens directly to gate and opens and closes with the gate.

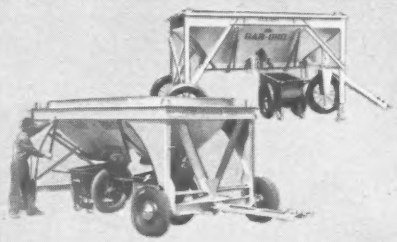
Extended Gate Type

Vertical Discharge Type

Heavy Duty Type

LAYDOWN BUCKETS

They lay down and roll over to a low loading height and automatically resume a vertical position when lifted. 16 standard models ranging from ½ to 3 cu. yds. of three types to suit any job.



PORTABLE HOPPERS

6 Models with three types of mountings are available in the Gar-Bro line. They save truck mixer waiting time and prevent delay of the cart crew and finishers. Have low (70" to 75") loading height and 36" clearance for cart loading.

Only GAR-BRO offers

A COMPLETE SELECTION

of concrete handling equipment

ONLY GAR-BRO SPECIALIZES in concrete handling equipment. And only Gar-Bro has a complete line of more than 300 equipment items to give you a complete selection of types and sizes to suit your concrete placing job. Gar-Bro's 30 years of experience makes a big difference in the ease of operation . . . in the efficiency . . . and in the extra advantages of Gar-Bro equipment for concrete handling—there is no substitute.

GAR-BRO MANUFACTURING CO. Los Angeles, Calif. • Peoria, Ill.
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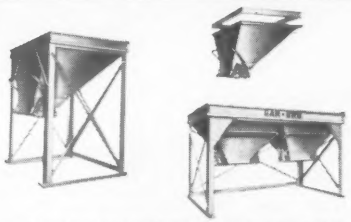


RECEIVING AND FLOOR HOPPERS

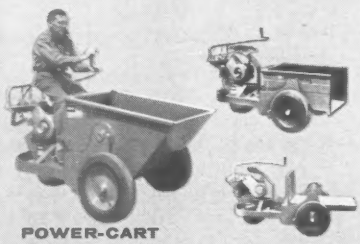
16 Hopper Units with capacities from 1 to 5.3 cu. yds. are convertible from a Receiving Hopper to a Floor Hopper by use of leg stands. Botn vertical front and center discharge type are available in single or double gate types.

CONCRETE CARTS

All carts are not the same. Gar-Bro Carts are "balanced" — when loaded . . . easier to handle . . . easier to push. 3 sizes: narrow and standard 6 and also 8 cu. ft., rocker dumps.

COLLECTION HOPPERS

A Choice of 87 Items are available in Gar-Bro's line of Collection Hoppers and Concrete Chutes. Each is engineered by concrete handling experts to answer any concrete placing problem.



POWER-CART

Designed for Concrete Handling and for faster, safer operation on temporary runways. Handles 12 cu. ft. . . . turns in 4′ radius . . . controls dumping . . . operates on 2 gal. of gas per day. Light and fast either forward or reverse.

Designed with concrete in mind...

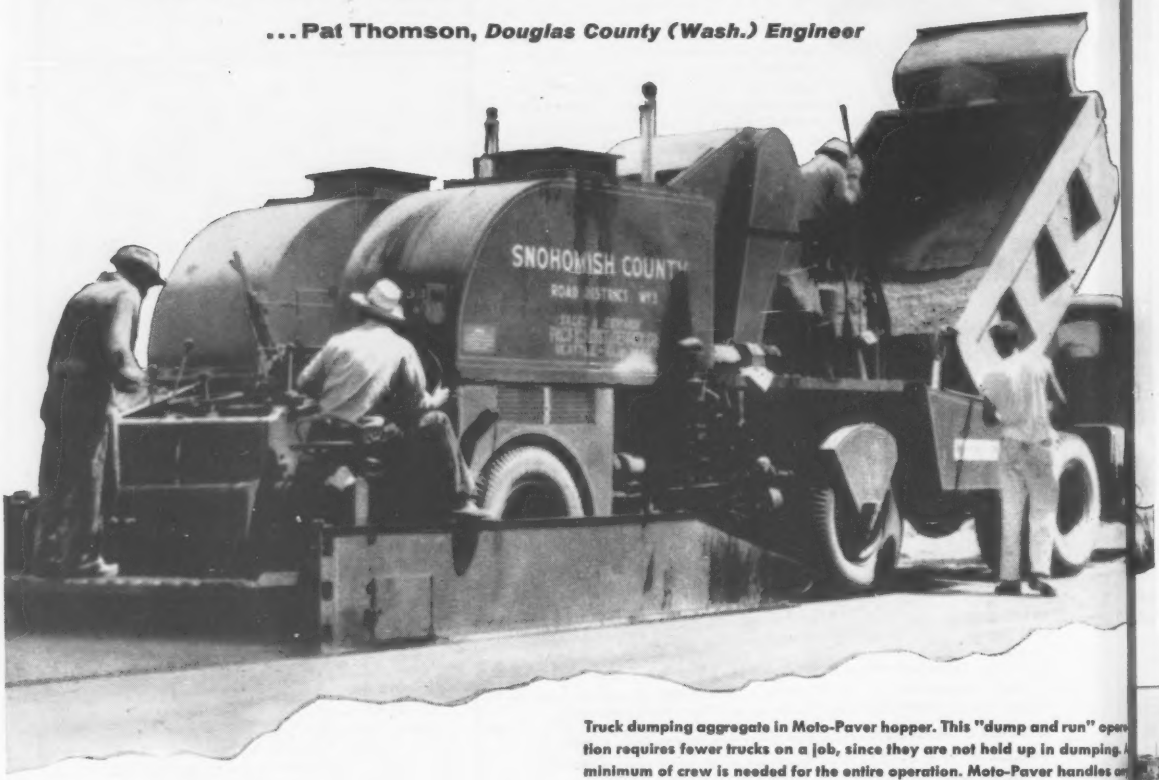
GAR-BRO

The world's most complete line of **CONCRETE HANDLING EQUIPMENT**

Write for catalog and Concrete Handling Manual.

"we looked at our roads...we looked at our budget...then we looked for a solution...and found it in the

...Pat Thomson, *Douglas County (Wash.) Engineer*



Truck dumping aggregate in Moto-Paver hopper. This "dump and run" operation requires fewer trucks on a job, since they are not held up in dumping. A minimum of crew is needed for the entire operation. Moto-Paver handles any size and type of aggregate with equal efficiency.

or—how a county engineer saved his county $2 per ton on asphalt

Pat Thomson, like many other county engineers in the northwest, had some tough road problems to solve. He had inherited many miles of dilapidated road-mixed and concrete roads and streets. New dam construction jobs and new industries had jumped traffic on some roads and streets from 100 vehicles or less per day to as high as 7,000 vehicles daily. These streets were in dire need of widening—and resurfacing.

"But," says Pat, "Douglas County is not exactly rolling in filthy lucre. In fact, we are so tight fisted up here that we count our dollars by the penny, and know where each one of them goes. So—we watched our costs closely. We finally found our solution in the form of cold mix asphalt, with a Hetherington & Berner Moto-Paver. A Moto-Paver owner from Wenatchee studied our job and gave us a price of $6.20 per ton (approximately 52¢ per sq. yd. of cold mix in place under all conditions for a 1½ inch compacted mat.) This compared to a cost of $8.20 per ton of hot mix."

Earl Barnwell, another county engineer from Washington (Snohomish County), according to Pat Thomson, has one of the most terrific weather problems in the U.S. In some cases he has had to "dry out" road mixed windrows as many as six times. Using the Moto-Paver, the only wet aggregate, in event of rain, is that which would be enroute to the job. With the Moto-Paver, Snohomish County's average cost per mile for a 2" mat 20 ft. wide was $3,555.70, with an extreme low of $2,840 and a high of $4,020. As a result of their experience with this first Moto-Paver, Snohomish County expects to buy two

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HETHERINGTON & BERNER INC. • *Engineers* • *Manufacturers*

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H & B Moto-Paver"

Asphalt is brought to the job in tank trucks for quick loading of the machine. All of the Moto-Paver operation tends toward a minimum loss of working time.

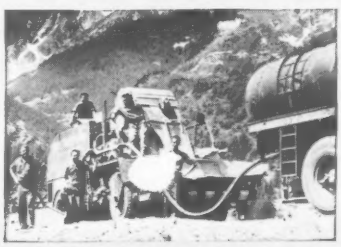
more such machines. Mr. Barnwell feels that while the Moto-Paver in no way supplants a hot mix plant, it does an excellent job of replacing old style roadmixing operations. The load in the machine is mixed and laid in approximately 2½ minutes, consequently there is no dangerous windrow of unmixed material left on the road. Traffic control is localized, cheap, and easily maintained. The extreme mobility that allows taking advantage of even one day of sunshine makes the machine especially useful for all rainbelt territories.

The above are just two of scores of examples that could be given to show how the Moto-Paver speeds the job and cuts the cost in resurfacing and maintenance work of all kinds. In the 12 years it has been on the market, Moto-Paver has established equally enviable records for efficient, economical production in many parts of the world under widely differing job and terrain conditions. In the mountains of Switzerland and Italy, the deserts of northern Africa, the tropical jungles of Central America, as well as in all sections of the U. S. and in Canada, Moto-Paver has met the requirements of all types of work under all kinds of conditions, using many different types of aggregate.

Bulletin MP-55, which gives complete information and specifications on the Moto-Paver, will be sent on request.

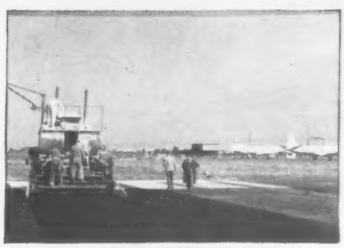
Moto-Paver
on Texas sub-division job

Moto-Paver
on Michigan road job



Moto-Paver
on Alps Mountain job, Switzerland

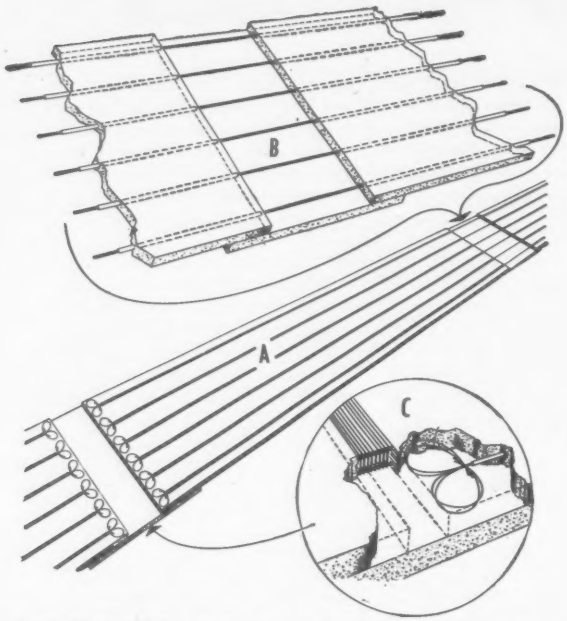
Moto-Paver
on Hayti job (Central America)



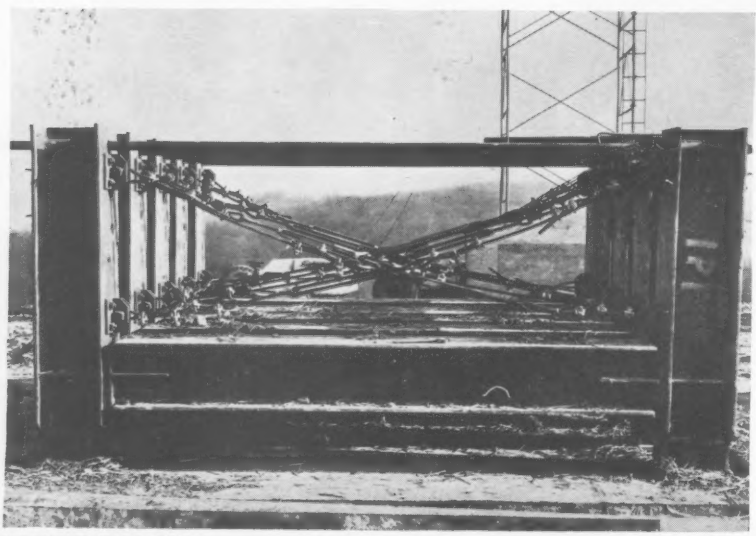
Moto-Paver
on Rome (Italy) Airport job

Moto-Paver building Forest Fire Prevention Road in France

Prestressed Concrete Roadway Studied i



(A) WIRE STRANDS in flexible conduit that pass through the length of the slab, and the six foot gap in the center are anchored at both ends. (B) The jacking operation stretches the steel strands, prestressing and placing the concrete in compression. A steel frame holds the slabs apart while the jacks are removed and the gap is filled with concrete. (C) Detailed view of the end of the slab, shows how the steel strands are embedded. A rubber joint has been developed for the expansion space between slabs.



STEEL FRAME holds two prestressed slabs in place while the gap is concreted. When the concrete is cured, frame is dismantled and removed.

Construction of an experimental prestressed highway in Pennsylvania represents one of the first efforts on the part of private industry to find a practical and economical method of building such a road.

The project, a 5-in., prestressed, 600 ft section of highway has been built in Pittsburgh by Jones & Laughlin Steel Corporation.

Last September—after several years of planning—earth-moving equipment began gouging out a level roadbed on a 742 acre site near the company's Graham Laboratory on Baldwin Hill. The experimental prestressed concrete roadway construction was carried out in February, followed by extensive tests.

Essentially, the experiment consisted of anchoring connecting wire strands at opposite ends of a 400 ft section of roadway to be formed. The strands passed through flexible steel conduits which were embedded in the concrete.

When the concrete was placed, a six foot gap was left in the middle of the section. Hydraulic jacks were placed longitudinally in this gap, and after the concrete had set, the gap was jacked apart to a width of eight feet, to produce the required tension in the wire strands and compression in the concrete.

With this accomplished, the jacks were removed—a special device was developed to hold the sections apart while this was done—and concrete was poured into the gap.

• **Rubber joint**—Present highway construction practice requires transverse joints for expansion and contraction at a maximum spacing of about 60 ft. However, it is around the joints where concrete eventually deteriorates, as heavy loads press down on the edge of the pavement to create "pumping" action.

In every prestressed 400 ft section seven joints were omitted, eliminating seven places where deterioration could take place. The concrete, being in compression, is strong although only five inches thick.

To compensate for the expansion and contraction of 400 ft instead of 60 ft, the joint in the experimental road had to be built wider than the conventional type. The B. F. Goodrich Industrial Products Company, which has been conducting research to find a suitable joint produced a prototype of a

Pennsylvania

TEN HYDRAULIC JACKS back to back have pushed two 200 ft slabs approximately two feet from their original position.

satisfactory joint, which will soon be installed and tested as part of the research on the experimental road.

The joint is 12 in. wide and extends the full depth of the concrete slab, and is designed to allow the top surface to remain level during maximum expansion and contraction of the concrete.

According to the manufacturer, the joint is an entirely new concept: It includes a series of metal plates bonded to rubber to carry the vertical loads imposed by traffic.

A 100 ft prestressed section has been placed at both ends of the 400 ft section bringing the total length of the road to 600 ft. In this manner two joints will be available for testing.

Engineering work on the project was done by the consulting firm of Richardson, Gordon & Associates, Pittsburgh, and the construction work was done by the Allegheny Contracting Industries, Inc., also of Pittsburgh.

Test specimens were studied at Carnegie Institute of Technology and the instrumentation for testing was designed by the Fritz Laboratory at Lehigh University.

digs more trenches in more places at less cost—and

fits more jobs!

THIS CLEVELAND 92—a compact maneuverable "Baby Digger"—is doing a neat job of digging from driveway to driveway in a tree lawn that's really *narrow*. The operator sets in and lifts out the digging wheel with speed and safety because the 92 gives him full job visibility and fast accurate boom hoist control. Synchronized wheel and conveyor speeds permit precision placement of spoil. No damage to curb, sidewalk or driveways either, thanks to the 92's perfect balance on long, smooth, non-clog crawlers —a real public relations asset.

The Cleveland 92 "Baby Digger"

- Digs all soils
- Digs in any weather
- Only 54" wide over crawlers
- Digs 10" to 20" wide
- Digs to 5' deep
- Power-shift conveyor
- Reversible discharge
- Portable, at legal limit speeds

THE CLEVELAND TRENCHER CO.

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Good Everywhere

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SOLUTION
for all these construction problems...

✓ **CRACKS IN CONCRETE SLABS AND PATIO** — Thompson's Water Seal helps prevent cracks, stains and dusting because it penetrates deep for hard water-repellent surfaces that are smooth and evenly cured.

✓ **SEEPAGE IN CONCRETE BLOCKS** — Thompson's Water Seal puts a deep-penetrating seal into concrete blocks to help maintain texture and color and to protect for 5 years or more against moisture seepage, leakage, stains, paint blistering and peeling.

✓ **JOB FOULED UP BY MOISTURE** — unlike surface-coaters, clear, colorless Thompson's Water Seal gives all porous materials a deep-penetrating seal for 5 years or more against moisture, alkalies, salt water, many organic acids — particularly valuable for door and window sections, masonry, plywood, basements, retaining walls, stucco.

✓ **EXTERIOR SIDING WARPS AND CRACKS** — Thompson's Water Seal penetrates deep into wood fibres — gives exposed structures protection for 5 years or more against weather and moisture that often cause warping, swelling, checking and grain-raising right on the job.

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contains Thompson's Water Seal end-use specifications for porous materials in building and maintenance applications... and for TWS use with paints, floor hardeners and Thompson's Waterproofing Redwood Stain.

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Books

Right-of-Way

JUST COMPENSATION by Henry J. Kaltenbach, in 49 sections assigned to each state and a general informational section; Right of Way and Legislative Consultants, 1025 Connecticut Ave., N.W., Washington, D. C., plus monthly supplement, $50.

With the problem of land acquisition a matter of paramount importance under the current multi-billion federal highway program, this basic loose-leaf volume can be a principal tool for highway officials at all levels of government, and for consulting engineers engaged on the program. It is of course also applicable to the more normal problems involved in municipal, state and federal construction.

Basically, the volume is a legal guide, indexed for speedy reference as a guide to general legal principles involved in compensation work to the law of the individual 48 states and of the federal government.

Said to be unique as a legal work in that it has no notes and requires none, the volume presents little theory, and is especially aimed at laymen who need practical legal knowledge. In an illustration of its use, the publishers point out that a specific question—such as "Can a farmer's claim that his farm should be valued as a subdivision be considered?"—may be looked up first under a general discussion of normal legal practice in this regard, then followed to specific cases in the state that may be in question, and may finally be supported by case lists for citations of decisions.

In addition to the loose-leaf volume, reports of most recent decisions and important statutory changes are supplied through monthly mailed supplements.

Author Kaltenbach has had long legal experience both in private practice and as attorney for numerous government agencies, including the Bureau of Public Roads.

Rx for Paper Work

PRACTICAL ACCOUNTING AND COST KEEPING FOR CONTRACTORS by Frank R. Walker. 253 pp. 5th Ed. Published by Frank R. Walker Company, Chicago, Illinois. $5.00

From preparing the bidding estimate to reporting the income tax this new volume recommends systems and forms for contractors of all sizes and for sub-contractors, architects and building materials dealers. Designed primarily for building contractors it should be ap-

SPECIAL APPLICATION EQUIPMENT*

FOR ALLIED Jet Seal

MAKES SEALING FASTER AND EASIER

Allied Jet Seal application equipment is so compact that it can be completely contained on a flat bed truck and still allow room for a heavy duty compressor (1) and material storage (2). Since Allied Jet Seal is a two component seal there are separate component vats (3) which are painted for easy identification. The unit is equipped with an air actuated hoist (4) to pick up the drums and raise them over the vats for easy filling.

The two components are pumped from the vats with air pressure through the hoses and are mixed and proportioned in Allied's patented extrusion nozzle (5). This special nozzle applies the seal positively and neatly in the joint. The free swinging boom (6) keeps the hoses free and makes the application of the sealing compound a one-man operation with this equipment.

Since the entire Allied unit fits on one truck this equipment is completely portable making it extremely desirable for resealing work as well as new construction. Write for further details.

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NOW... provide *COMPLETE* containment of water, wastes, brines and sludges with

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Pre-fabricated "HYDROMAT" Asphalt Liners provide the ideal liner for all domestic, industrial and recreational facilities where the containment of water, wastes, sludges, brines, etc. demand a very efficient, economical and impervious lining material. "HYDROMAT" is quickly and easily installed as a monolithic liner with mechanically sealed joints . . . will expand and contract with soil movements without rupturing or breaking the seal. Installed over (exposed) or under earth, concrete, gunite, steel or other materials . . . provides the practical answer to the problem of re-lining old, cracked concrete or gunite linings. "HYDROMAT" may be safely used for the containment of potable water in clear well construction and its ruggedness and durability permit its use as a fully exposed lining in large reservoirs to depths exceeding 50 feet. "HYDROMAT" is available in three thicknesses, ½", ¼" and 5/32", in 4' widths and lengths up to 15' . . . longer lengths available on special request.

For complete installation and technical data write today for your copy of the "HYDROMAT MANUAL".

SEALTIGHT PRODUCTS FOR BETTER CONSTRUCTION

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Gentlemen:

☐ Send my copy of the "HYDROMAT MANUAL".

☐ Have representative call.

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plicable also for contractors on construction of all types.

Generously illustrated with forms for use at each stage of a construction job it has a supplementary service in which the recommended standard accounting forms can be purchased.

For unit costs accounting and control, excellent and comprehensive letter-number coded check lists are given covering labor costs on each class of work, materials, equipment and overhead with parallel codes for materials cost accounting and for equipment and overhead.

Field control forms through office accounting are detailed, time cards, payroll forms, social security record forms, income tax record forms. Proposals and bids, contract agreement forms, progress reports, timekeeping systems, time distribution forms, job cost accounting and analysis complete the paper work on every phase of the job.

These systems of bookkeeping are shown with instructions on how to do it: an accurate self-balancing cash-journal system designed for smaller contractors; a practical self-balancing cash-journal system that may be used by contractors of all sizes; and a practical voucher system that is a complete double-entry system based on a "Cash-Voucher Register."

This is an exceptionally thorough, well illustrated and explained treatise on contractor paper work and how to cope with it.

How to Rig

HANDBOOK OF RIGGING, Second Edition, by W. E. Rossnagel. 344 p., McGraw-Hill Book Co., Inc., $6.50.

This practical manual of rigging practices and pointers, for construction and industrial work, has been published in a fully revised second edition. The book is planned to show how to handle every step in any rigging operation—from rigging a swinging scaffold to operating a hoist or using a hydraulic jack.

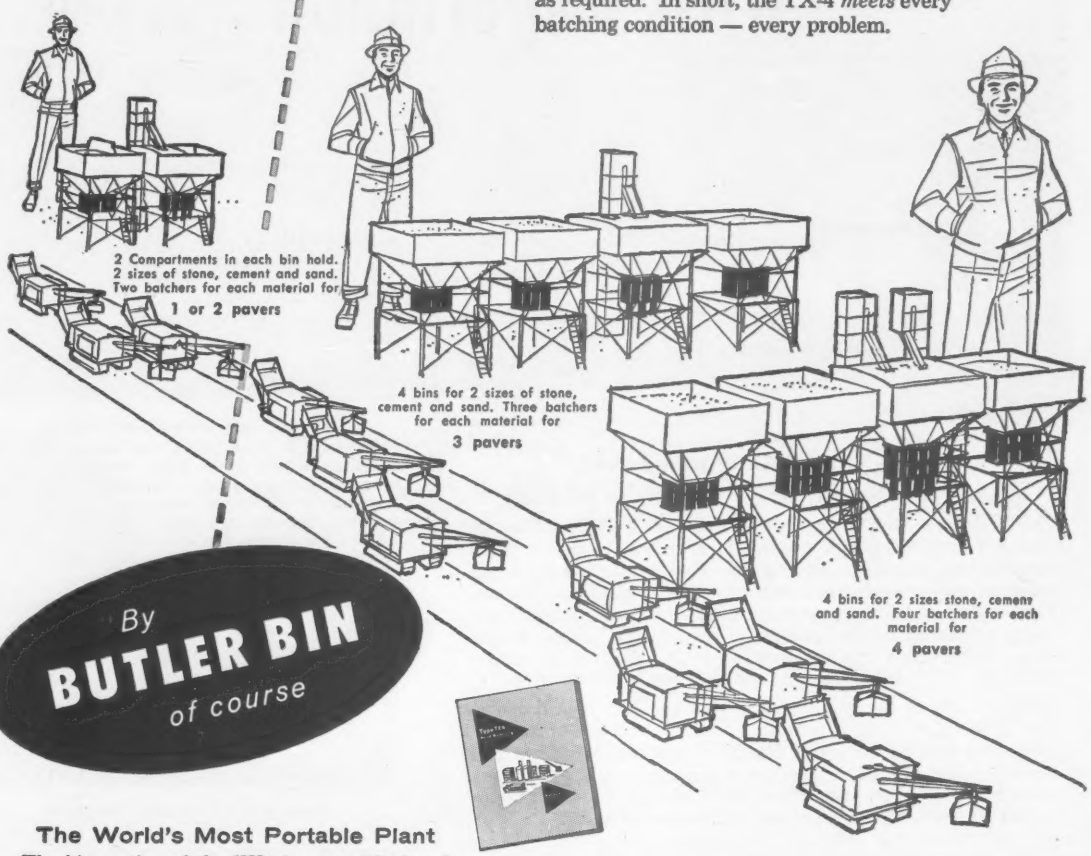
The manuscript includes simple formulas used in calculating the strength of hoisting tackle, beams and posts. It gives such varied information as data on safe loads on wire rope and chain, effect of defects on the strength of timbers, reference codes, laws, and standards relating to rigging, hoist signals, safety practice and first aid. Mr. Rossnagel, a safety engineer, with the Consolidated Edison Co. of New York, draws upon practical background for writing this book through 15 years of work with the Edison Co. in the construction field.

YOUR PROFITS GROW WITH THE TX4

The plant that grows with you. . .

Whether you operate 1, 2, 3, or 4 pavers — there's a BUTLER TX-4 Roadbuilders set-up for you. And as you grow — the same basic plant grows with you. No old equipment to replace . . . you simply add two bins and one batcher to expand a 1 or 2-paver plant to a set-up for 3 pavers. And for 4 pavers you add only one batcher to each of the four bins. Low investment and the highest batching speed the roadbuilding industry has ever known.

And all with only one operator — even the 4 paver set-up. Batching is completely automatic and interlocked. Operation is simultaneous or in sequence. A switch selects topping or base material as required. In short, the TX-4 *meets* every batching condition — every problem.


2 Compartments in each bin hold. 2 sizes of stone, cement and sand. Two batchers for each material for
1 or 2 pavers
4 bins for 2 sizes of stone, cement and sand. Three batchers for each material for
3 pavers
4 bins for 2 sizes stone, cement and sand. Four batchers for each material for
4 pavers

By **BUTLER BIN** of course

The World's Most Portable Plant

The bin section of the TX4 is crane lifted and shipped in one piece. The batchers are in one unit with bracing all in place. No tie-downs or support needed for moving. All wiring and air piping are self-contained ready with quick-connectors for fast "plug-in" hook-up. Support columns ship separately and are hinged to bin, swing into place when crane lifts bin. Bolts are very few in number — all are large and easily handled. Bin rests on foam rubber cushion at top of batcher section, provides a tight, dust and cement proof seal when compressed by two hand-clamps which hold both sections securely. . . Dismantling and re-erection are but a matter of hours instead of days.

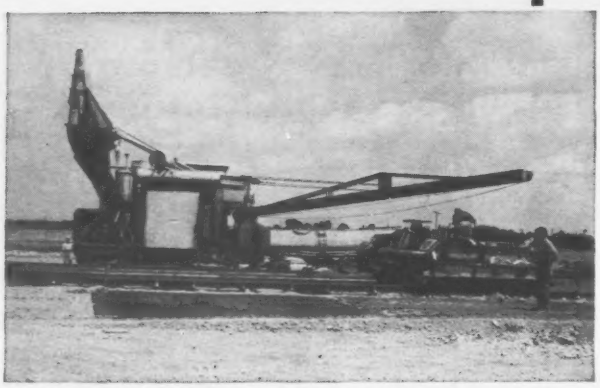
The Butler TX4 obsoletes all previous equipment ever built. Read the complete description offered in this new Bulletin. Every part, every component completely illustrated. Send for it today. Just write "TX4" and your address on a postcard.

BUTLER BIN COMPANY

987 BLACKSTONE AVE. • WAUKESHA, WISCONSIN

Here's the only Complete Concrete Paving Line with Experience

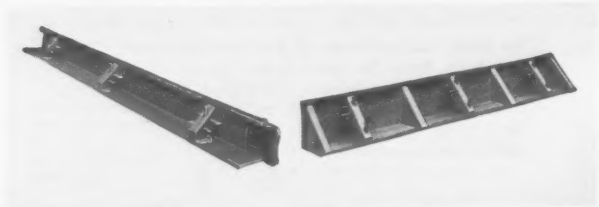
depend on the BLAW-KNOX "Complete Package" for maximum profit



Blaw-Knox MultiFoote Paver gives you faster, more complete Mixing

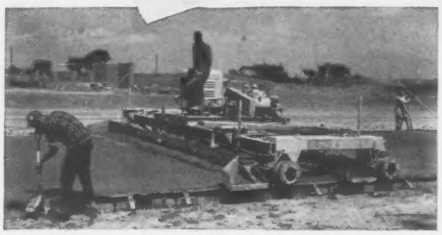
The exclusive cone-shaped drums of the MultiFoot Pavers assure you of thorough mixing in a shorter time or more complete mixing in a specified time than you could get in an ordinary paver with the common cylindrical-shaped drum. The natural end-to-end motion of the aggregate, cement and water produced by the cone drum results in a folding action that completely turns the batches over and over to assure the most thorough mixing in the shortest possible time.

With this more thorough mixing and the faster skip operation of the MultiFoote, hydraulic controls and the automatic cycle you can be sure the MultiFoote Paver will give you more batches per hour. If you are planning concrete paving work be sure to see your Blaw-Knox MultiFoote distributor to get all the facts about these high capacity units.



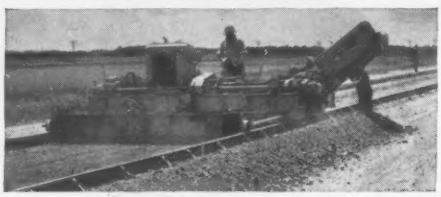
Self-Aligning Road and Airport Forms

Setting Blaw-Knox Self-Aligning Paving Forms true to line and grade is a cinch. Look at all the features that save time and money. Double-wedge staking system prevents tipping of forms by crooked stakes. One-piece lock-joint end slides give you fast aligned joints. Buttress-type stake pockets together with over-all sturdy construction of the forms prevent mis-alignment. Road forms are available in heights of 6" or more and Airport forms in heights of 12" or more.



Dependable Blaw-Knox Finisher

Team-up a Blaw-Knox two-screed Finishing Machine with a Blaw-Knox Spreader and you can handle the output of two dual-drum pavers working at maximum capacity. With this team you will be sure of turning out highest quality finish from harsh, dry concrete. Easily adjusted widths and choice of traction and screed speeds adapt Finisher to fit any paving job.

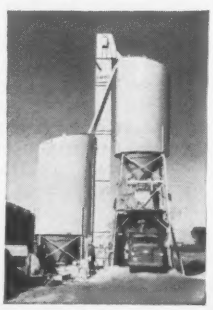


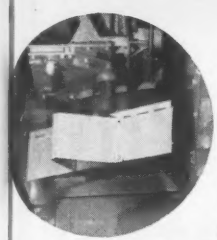
Blaw-Knox Precision Subgrader

Here's the only Subgrader that excavates by vibration — cutting through even the hardest subgrade to produce a perfect grade true to crown and cross-section. Fast and accurate, it produces more work with less power at a lower cost per square yard to assure accurate control of slab thickness to save concrete.

Fast Accurate Batching Plants

Blaw-Knox Aggregate and Cement Bins and Batching equipment are available to match the high capacity of all units in the Blaw-Knox Complete Package of Concrete Paving Equipment. Both Cement and Aggregate Batching Equipment are available with manual, push-button air-operated or automatic controls.





Only Blaw-Knox Concrete Spreaders spread with a Blade—the Natural Way!

Even the driest and harshest concrete is easily and naturally spread with the automatic transverse action of the spreading blade, shown in circle at left. This transverse motion of the spreading blade spreads concrete uniformly to elevation required and clears the path for forward motion of the spreader. Since there is a minimum of action on the concrete, there's no segregating effect regardless of its dryness or size of aggregates. Automatic reversing of the spreader blade relieves lateral pressure so alignment of forms is never disturbed. Blade can be set to automatically clear pre-installed center joint. A vibratory attachment that operates off the spreader power unit can be added that will assure maximum density without segregation even in dry, harsh concrete. Even with vibratory attachment only one operator is needed. Width easily adjusted to meet all paving requirements.

All "Complete Package" Paving Equipment Job-Proved

Blaw-Knox "Complete Package" Paving equipment has become the first choice of contractors throughout the country. Contractors with a spread of Blaw-Knox equipment know that they can depend on its many tested and proved design features plus one distributor source for parts and service to keep their jobs on schedule. If you are planning to bid on concrete paving, plan to use the only line of equipment with experience—see your nearest Blaw-Knox Distributor today.

For more information on any of these units send for the following bulletins by number — MultiFoote, No. 2616; Road Forms, No. 2370; Finisher, No. 2517; Subgrader, No. 2227-R; Batch Plants, No. 2488; Spreader, No. 2485.

BLAW-KNOX

BLAW-KNOX COMPANY

Construction Equipment Division

41 Charleston Ave., Mattoon, Illinois

PROTECTIVE-CURING with SISALKRAFT means Better Concrete for Roads & Floors

For strong, durable concrete, PROTECT SAFELY AND CURE UNIFORMLY with Sisalkraft — white, reflective surfaced for highways, Orange Label for floors. The Sisalkraft method of curing costs less than any other method and does a BETTER job of curing — write to us in Attleboro, Mass. for booklet on "Curing and Protecting Highways" or technical booklet "Curing Concrete."

American SISALKRAFT Corporation

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Other Products in the SISALKRAFT LINE

Sisalkraft Moistop — Permanent vapor barrier

Sisalkraft Vaporstop — Rot resistant vapor barrier

Copper Armored Sisalkraft — Electro sheet copper for concealed flashing and waterproofing

Sisalation — Reflective insulation and vapor barrier

Sisalite — Pure polyethylene film

Sisal-Glaze — New plastic glass replacement

In Canada Sisalkraft products are sold under the following names: Orange Label Fibreen, Sisalation, Copper Armored Fibreen, Fibreen Vaporstop, Fibreen Moistop — contact Alexander Murray & Co., Ltd., Montreal.

Legal

Performance Blocked

Subcontractor's damages when a prime contractor prevents his performance

When a contractor is wrongfully prevented from completing his contract, he is usually allowed to recover the contract value of the work actually done, plus any profit he would have made if he could have completed the contract.

This is one of the questions that arose during the repair of the Colorado River Flood Gates on the International Waterway in Matagorda County, Tex. Prime contract for the repair work was held by Tower Contracting Co. Flores was subcontractor for part of the work.

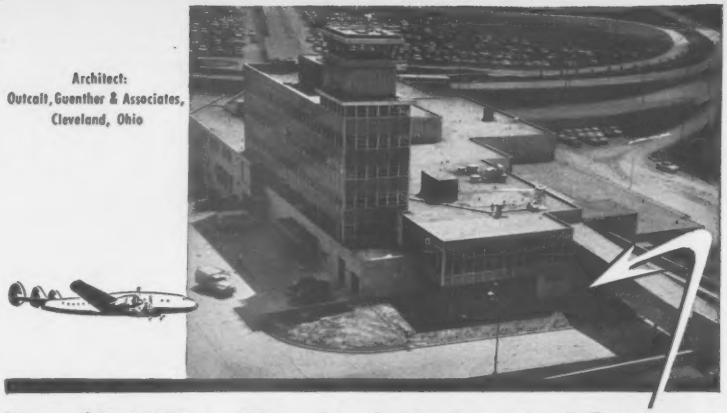
Flores ran into two problems: The Corps of Engineers had underestimated by 12,248 cu yds the amount of compacted backfill he was required to use on the job, and Tower cancelled its contract with Flores after the Corp of Engineers had complained that Flores wasn't working diligently enough to meet the completion date.

Tower put another sub on the job but Flores, ignoring the cancellation, continued to work. With both subs working, the job was completed on time. Flores claimed he could have completed the job on time and tried to recover the amount due him under the contract, plus compensation for the extra amount of fill required. Flores did obtain judgment but the lower court was reversed on appeal[1] because the judgment included payment for work done by the other subcontractor. A new trial was ordered to determine the amount of damages sustained by Flores.

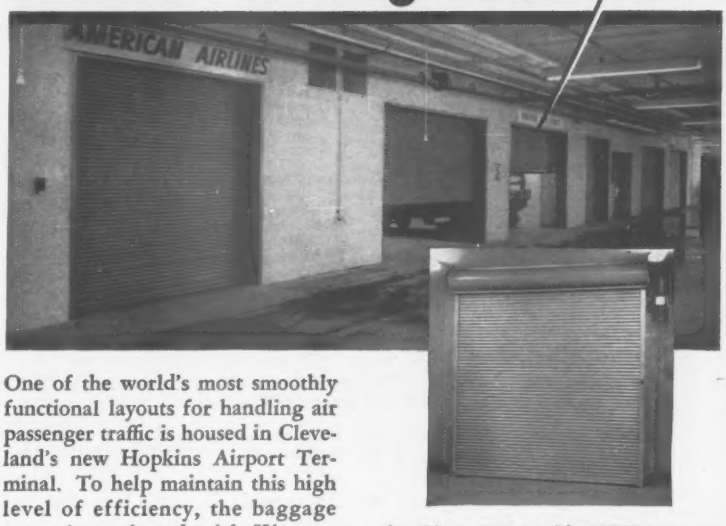
In discussing the first problem—the measure of damages for Tower's cancellation—the Texas court said:

"The authorities are practically unanimous, both within and without the state, on the proposition that where the owner wrongfully interferes with a contractor and prevents his completion of the contract, the proper measure of damages, where the contractor sues on the contract, is the contract price less what would have been the cost to the contractor of completing the work; or, differently put, the contract value of the work actually done, plus any profit the contractor would have made had he been permitted to complete the performance of his contract. This, however, is not the sole measure of damages. In the case of wrongful interference by an owner, the contractor may

Architect:
Outcalt, Guenther & Associates,
Cleveland, Ohio



New $5 Million Cleveland Air Terminal Features
Kinnear Rolling Doors



One of the world's most smoothly functional layouts for handling air passenger traffic is housed in Cleveland's new Hopkins Airport Terminal. To help maintain this high level of efficiency, the baggage room is equipped with Kinnear Steel Rolling Doors.

The space-saving coiling upward action of Kinnear Doors has made them top choice through more than a half century of progress in building design, such as this new terminal represents.

Every foot of floor and wall space surrounding Kinnear Rolling Doors — *within an inch or two of the door curtain, either inside or outside the building* — is fully usable at all times.

When closed, the rugged curtain of interlocking steel slats *(originated by Kinnear)* provides extra protection against theft, intrusion, vandalism, storm, accidental damage, and fire. When raised, it clears the entire opening and *stays* out of reach of damage by wind or vehicles.

Highest resistance to rust and corrosion is assured by Kinnear's heavy-duty hot-process galvanizing, which applies a full 1.25 ounces of pure zinc per square foot of metal, by ASTM standards.

Kinnear Rolling Doors are built any size. Motor operation with push-button control also available. Write for the Kinnear catalog.

KINNEAR ROLLING DOORS
Saving Ways in Doorways

The KINNEAR Mfg. Co.
1820-40 Fields Avenue, Columbus 16, Ohio
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All Principal Cities

NEW!
V-R "X" Style Percussion Bit
Non-Rifling . . . Proved best by test
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Bottoming Type
Load is carried where body is strongest. Specifically designed for coupling steels.
Exclusive grade of carbide — manufactured by V-R—wears longer, gives more footage.
Long body distributes load throughout bit body.
Carbide inserts "balance-brazed" to eliminate stresses that cause failure.

Prevents Squaring in the Hole

The new V-R "X" type carbide tipped rock bit eliminates squaring in the hole often encountered with cross-style bits. It drills clean, round deep holes faster at lower cost than any other bit you can buy.

Exclusive V-R Carbides—developed *and manufactured* by V-R, a leader in the carbide industry since 1930.

Faster Penetration—the impact load is carried a shorter distance than with a shoulder type bit, producing greater penetration on every impact.

Longer Thread Life—load on the threads is much less than in shoulder type bit, minimizing chance of thread strippage.

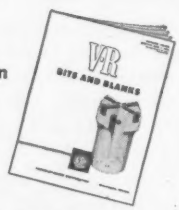
Less Chance of Ring-off—the major impact load is carried at the bottom of the bit body, reducing load on the skirt which is the primary cause of rock bit ring-off.

"Balance-Brazed" Carbide Tips—prevent stresses that cause premature bit failure.

Try them . . . and you'll buy them—the bits that are beating them all: V-R BITS.

Thread Type	Bit Sizes
600	2½ through 4½
700	2¾ through 4½
1000	4 through 5

Ask for percussion bit catalog and prices



M-633

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treat the contract as rescinded and recover on quantum merit the full value of the work done, even though it may exceed the contract price."

The appellate court, further stated that where the contract is executory, the owner has the power to violate or renounce the contract, and in so doing he subjects himself only to such damages as will actually compensate the other party for having the full performance prevented.

On the second point, Flores claimed Tower had agreed to pay for the excess backfilling. This claim was turned down by the court, which said:

"An agreement by a contractee to compensate a contractor for doing what he is already bound to do by a valid contract is without consideration. Jones v. Risley, 91 Tex. 1, 32 S.W. 1027; Stone v. Morrison & Powers, Tex. Com. App., 298 S.W. 238."

(1) Tower Contracting Co. v. Flores, 294 S.W. 2d 266, Court of Civil Appeals of Texas, Oct. 4, 1956.

Substantial Performance And Measure of Damages

Where a contractor has only substantially performed a contract because he has omitted some items of work or performed some of the work in a defective manner, the owner, under the general rule of law, may recover as damages the cost of completing the building as called for by the plans and specifications.

In an Ohio case, for example, a contractor sought to recover the balance he claimed was due under a contract. The owner claimed that the contractor had not completely performed the contract and counterclaimed for the amount it would cost to complete the work.

The contractor contended that the correct measure of damages was the difference in the market value of the building as constructed and its value had it been constructed in accordance with the contract requirements. The trial court found for the owner, and the judgment was affirmed on appeal.[1]

(1) Reinhard v. Bertram, 136 N.E. 2d 775.

Limits Waiver of Damages For Delayed Performance

The right to liquidated damages for delayed performance may be waived. The waiver may be specific rather than general.

In a case that arose in Texas, for example, the State Supreme Court had

"TUBELOX" SCAFFOLDING gives working platforms as well as support for monorail system. Note hoist tower in center of new wing.

MO-SAI PANELS are suspended from monorail and guided to place by masons. Gasoline motor provides power for vertical movement of these heavy panels.

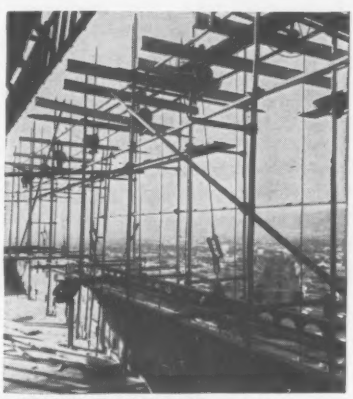
43,195 ft. of Scaffolding Helps Complete Panelled Building

BUSINESS has been so good for The Prudential Life Insurance Company, Western Home Office, Los Angeles, that a north wing addition to the main building (1949) was needed. Since the architects, Welton Becket & Associates (original designers also), believed that the same dignified beauty of the ceramic veneer and Mo-Sai panels used on the first structure was desirable, it was specified.

To speed the handling of these 7′ x 6′6″ 1000-lb. panels, William Simpson Construction Company, general contractor, uses 43,195 ft. of "TubeLox"® Scaffolding, a 169′-high "Gold Medal"® Steel Hoist Tower, and raising and lowering drum mechanisms taken from "Gold Medal" Safety Suspended Scaffold Machines. The drums provide cable support and height adjustment for a monorail system which transports panels and grout (in special 8 cu. ft. buckets designed by A. H. Maxted, mason contractor).

The "TubeLox" Scaffolding provides ample working platforms for masons. The monorail height-adjusting drums are attached to beams laid across this scaffolding at top. Controlled by intercom signal system, both panels and grout buckets travel up the hoist device, then on to the monorail. A 25 hp. gasoline motor provides power to the monorail for spotting these materials exactly where needed. Tried elsewhere, too, this combined men-and-materials-handling equipment has proved most efficient for precast construction work.

SPECIAL GROUT buckets designed by A. H. Maxted are also supported by and moved along monorail speeding the application of concrete for holding panels.



VIEW OF THE TOP of the "TubeLox" Scaffolding showing how drum mechanisms are supported by beams. Drums hold cables which provide height adjustment for monorail.

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.

FOR GREATER SAFETY... EFFICIENCY... ECONOMY

GOLD MEDAL LADDERS SCAFFOLDING

THE PATENT SCAFFOLDING CO., Inc.

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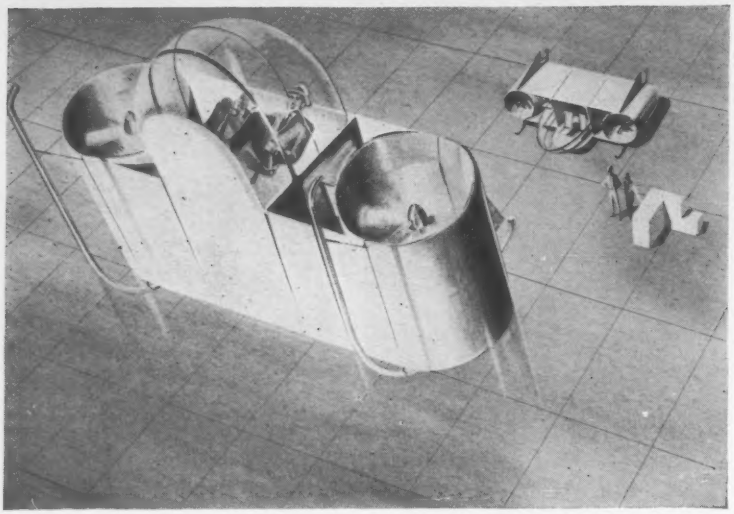
MARS outstanding design **SERIES**



rock 'n' fly

A design combining the aerodynamic principles of ring wings, ducted propulsion and elevons is the novel concept for this all-purpose utility plane that "rocks" on take-off and landing.

Resting on the ground horizontally, the plane is rocked back into vertical take-off position with partial power. It lands the same way, backing down to the ground, then forward to rest. Designer M. A. Novosel of Van Nuys also suggests a unique provision: if one engine fails, an inter-engine shaft is automatically coupled to maintain even thrust. But, most of all, this imaginative "aerial pickup" design embodies economy of operation in both fuel and space.

No one can be sure which of today's design ideas will become production realities tomorrow. But it will be as important then, as it is now, to use the best of tools when pencil and paper translate an idea into a project. And then, as now, there will be no finer tool than Mars – from sketch to working drawing.

Mars has long been the standard of professionals. To the famous line of Mars-Technico push-button holders and leads, Mars-Lumograph pencils, and Tradition-Aquarell painting pencils, have recently been added these new products: the Mars Pocket-Technico for field use; the efficient Mars lead sharpener and "Draftsman's" Pencil Sharpener with the adjustable point-length feature; and – last but not least – the Mars-Lumochrom, the new *color-drafting* pencil which offers revolutionary drafting advantages. The fact that it blueprints perfectly is just one of its many important features.

The 2886 Mars-Lumograph drawing pencil, 19 degrees, EXEXB to 9H. The 1001 Mars-Technico push-button lead holder. 1904 Mars-Lumograph imported leads, 18 degrees, EXB to 9H. Mars-Lumochrom colored *drafting* pencil, 24 colors.

J.S. STAEDTLER, INC.
HACKENSACK, NEW JERSEY.

at all good engineering and drawing material suppliers

before it an understanding between a prime contractor and a sub, the gist of which was this: If the sub would stop work whenever the prime contractor asked him to, the prime contractor would not charge the sub with damages for delayed performance unless the owner charged the prime contractor for such damages.

The court ruled that the agreement did not waive the right to liquidated damages for delays that were not caused by stoppage orders.[1]

(1) Mundy v. Knutson, 294 S.W. 2d 371, Supreme Court of Texas, Oct. 24, 1956.

Minor Defects Not a Bar To Contractor's Recovery

A contractor may recover for work performed under a building contract even though he has deviated from the contract in minor respects.

"The law is settled in this state that in the case of building contracts, especially where the owner has taken possession of the building and is enjoying the fruits of the contractor's work, no literal compliance with the contract in all details and no absence of defects and imperfections is required to entitle the contractor to recovery on the contract, but he can have such recovery after substantial performance in good faith, if the deviations and imperfections do not substantially affect the usefulness of the building for the purposes for which it was intended, subject to an allowance for damage if the owner has suffered any by reason of the failure to perform strictly. Whether, in any case, defects and omissions are substantial or unimportant is generally a question of fact."[1]

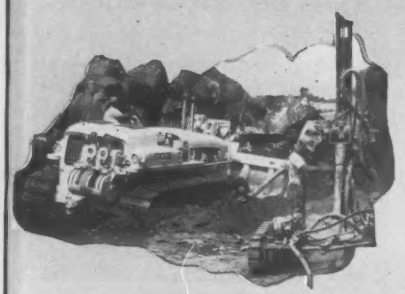
The case arose when a contractor sued to foreclose a mechanic's lien for the balance due under a construction contract.

The owner counterclaimed damages for breach of contract. The court found as a fact that the contractor had substantially performed the contract, noting that the defects in the work were minor and that the owner had taken possession of the building and had remedied the defects at a cost of $625. The contractor was granted a judgment for the balance due under the contract, less the cost of remedying defects in the work. This judgment was affirmed on appeal.

(1) Martin v. Karsh, 298 P. 2d 635, District Court of Appeals of Cal., June 22, 1956.

These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.

Here's why Euclid TC-12 Twin-Power Crawlers give you MORE WORK-ABILITY



PERFORMANCE

On a 200′ push at a coal mine in Pennsylvania, the TC-12 moved about 440 loose yards per hour.

On a Michigan stockpiling job, the TC-12 moved 796 tons of loose coal in one hour on a 150′ push.

On a coal strip mine operation in Ohio where waste banks had to be levelled, a TC-12 produced about 950 yards per hour with a 50′ push.

SPEED

The TC-12 has speed—up to 7.8 mph forward or reverse—but that's not all. Pivot turns (one track forward and one reverse at the same time) plus changing of direction and range under full power without loss of momentum save considerable time during the tractor's daily operation.

POWER

Two engines with a total of 436 h.p. (413 net h.p. at drive train) make this Euclid "Twin" the world's most powerful crawler. Being more powerful, the TC-12 offers additional benefits, such as faster work and longer engine life, since the engine often operates at less than full capacity without strain. And, the reserve power permits handling the toughest tractor job.

MANEUVERABILITY

Pivot turns with the TC-12 take less space and time. Changing directions on the go with Torqmatic Drives makes maneuvering into position quicker. Split-half construction gives better traction on uneven ground.

EASY OPERATION

Clutching and shifting are eliminated with the TC-12 "Twin". There's 24-volt push-button starting and instant response to direcrional levers, range selector and hand throttle levers, all of which are conveniently located to allow complete freedom of the operator's right hand for control of attachments.

DESIGNED FOR EASY SERVICING

Many design features contribute to long life and easy servicing. Location of radiator behind operator reduces damage and improves cooling. Track tensioning and recoil system are automatic. All engine accessories are readily accessible from outside the engine compartment. Rollers can be removed without breaking track. Engines, Torqmatic Drives, and planetary final drives can be removed without disturbing the other components.

THEY ALL ADD UP to just one thing—
Euclids are your best investment.

EUCLID DIVISION,
GENERAL MOTORS CORPORATION, Cleveland, 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

Murchison Skyscraper, Denver—Pile driver is air-powered from this G-D Rotary 600.

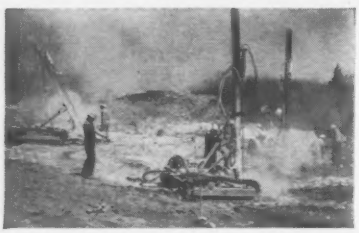
Lucin Cutoff—G-D Rotary 600 supplies air for dumping fill in Great Salt Lake.

New York State Barge Canal—G-D Rotary 600 portable supplies air for pile driver.

El Paso Gas Pipeline Project—G-D "Quadril" and rotaries for trenching through rock.

Calumet-Sag Channel—G-D rotary compressor furnished air for tractor-mounted drill.

St. Lawrence Seaway—Line drilling with G-D wagon drills and Rotary 600 portable.



Connecticut Turnpike—G-D "Air Trac" self-propelled, crawler-mounted drilling units.

Dalles Dam — G-D "Air Trac" drills maneuver readily over rough terrain.

Snowy Mountains Hydroelectric "Air Trac" joins other G-D equipment in Australia.

Pelton Dam—G-D S55 sinker drills blast holes for cutting keyway in solid rock.

Chiese Hydroelectric Project—In Italy, G-D "Air Trac" tackles dense Alpine granite.

Chicago Filtration Plant—G-D rotary compressor sinks shaft to water tunnel level.

THERE'S A GARDNER-DENVER DISTRIBUTOR IN YOUR AREA / **SEE HIM FOR DETAILS**

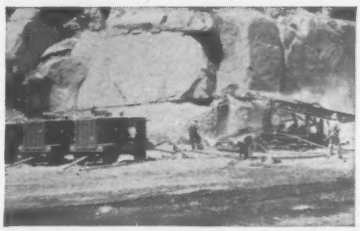
Noxon Rapids Hydroelectric Project—G-D "Air Trac" drills work 'round the clock.

Beauharnois Canal and Lock—G-D "Air Trac"® drills on St. Lawrence Seaway.

Massachusetts Turnpike—G-D "Air Tracs" positioned for drilling angle holes.

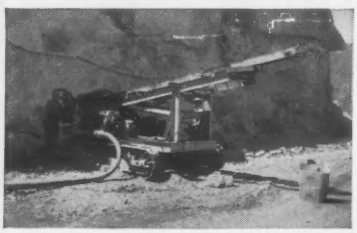
On job after job . . . great contractors choose Gardner-Denver equipment

Montgomery Dam—Self-propelled G-D "Air Trac" drills work hillside cut.



Wishon Dam—G-D rotaries power "Air Trac" and heavy-duty G-D 5½" drill.

Pennsylvania Turnpike Extension—G-D "Air Trac," wagon drill, Rotary 600 on rock cut.



San Francisco Freeway—G-D 5½" DH143 drill helps move a million yards of rock.

Contractor's Hill—G-D tractor-mounted booms and drills on Panama Canal job.

Swift Creek Tunnel—G-D drifters and hydraulic booms on truck-mounted jumbo.

ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

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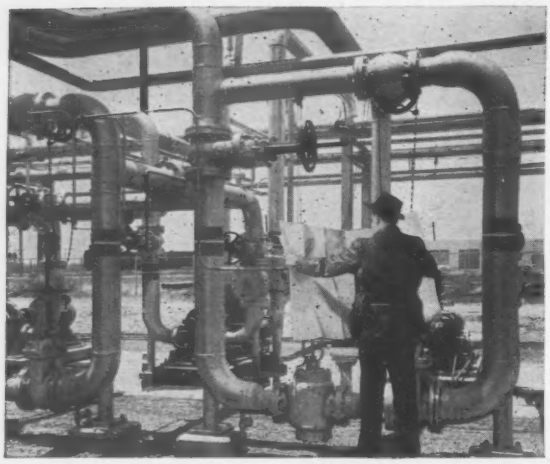
Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada) Ltd., 14 Curity Avenue, Toronto 16, Ontario

Speed up the job with

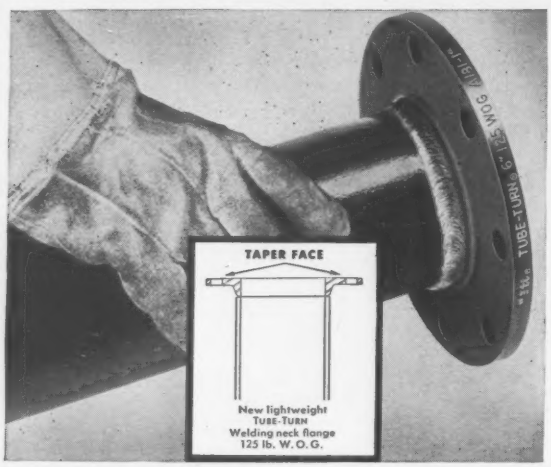
TUBE-TURN*

welding fittings and flanges



COMPLETE-LINE SERVICE. More than 12,000 standard items in the line of "TUBE-TURN" products . . . all types and sizes of welding fittings and flanges . . . schedules and materials to match *your* job. Available from your nearby Tube Turns' Distributor.

PIPELINE SPECIALS. There's a wide range of special TUBE-TURN fittings to simplify pipeline construction . . . new welding neck anchor forgings such as shown . . . manifold fittings, full-encirclement saddles, venturi reducers, large diameter odd-angle elbows.



ADVANCED PRODUCT DESIGNS . . . such as the new TUBE-TURN Taper Face Welding Neck Flange. This lightweight flange for 125-lb. W.O.G. service cuts cost of low pressure distribution lines, affords effective seal, protects low pressure valve flanges from cracking.

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What Research Means to American Business

American industry plans to invest $150 billion in new plant and equipment during the next four years—more than in the five years 1952-1956. It plans to carry out this record investment even though manufacturing capacity has nearly doubled since World War II. These facts are reported in McGraw-Hill's tenth annual survey of Business' Plans for New Plants and Equipment. They contradict many long-established theories about investment in capital goods.

According to the textbooks, a high and rising level of capital investment is generally followed by a decline. The bigger the rise—so the old theory goes—the bigger the decline will be. But, after a decade of high-level investment and an especially strong rise in the past two years, industry now has plans to keep right on with near-record outlays for plant and equipment. Does this mean some new factor has been added, to change the investment cycle?

The New Factor—Research

The latest McGraw-Hill survey points out one new factor which, more than any other, is changing the nature of the investment process. This is the record outlay planned by U.S. corporations for **scientific research and development**—to create new products and develop new industrial processes. The rapid growth of research in industry, and plans for even more remarkable growth in the years ahead, are shown by the accompanying table.

This year industry plans to spend $7 billion on research and development — up 20% from 1956. By 1960 it will spend $9 billion — enough to create a major new industry.

By 1960 manufacturing industry expects sales to be up 26% — with half the increase in products that were not made in 1956.

Growth of Research and Development Expenditures

(Millions of Dollars)

	1955	1956	PLANNED 1957	PLANNED 1960
Machinery	408	506	577	704
Electrical Equipment	950	1,149	1,310	1,637
Aircraft and Parts	1,038	1,558	2,274	3,161
Fabricated Metal Products and Ordnance	134	165	174	210
Professional and Scientific Instruments	185	252	300	453
Chemicals	440	498	528	617
Paper, Rubber, Stone, Clay and Glass Products	149	174	196	233
Petroleum Products	171	205	225	277
Other Manufacturing	1,038	1,279	1,388	1,557
Non-manufacturing industries	254	310	347	419
ALL INDUSTRIES	4,767	6,096	7,319	9,269

What Research Is Doing

Here are some examples of how industrial research is opening up new markets, or compelling the modernization of old facilities:

New automatic controls in petroleum refining will raise the quality of gasoline and reduce the time required for production. A new process for recovering oil from depleted wells promises to multiply our potential reserves.

A new process for treating iron ore will permit the ore to be fed directly into steel furnaces—without the need for blast furnaces or coke ovens.

New turbine engines—made possible by the development of heat-resistant alloys for turbine parts—offer greatly increased power for aircraft, ships and automobiles.

Altogether, industry plans to introduce more new products in 1957-1960 than in any previous four-year period. It also plans new processes on a scale that will make much of our present capacity obsolete. These new products and new processes are the secret behind continuing plans for high investment.

One-third of all manufacturing firms are building new plants this year to produce new products, and by 1960 this may account for 10% to 20% of all capital expenditures. At the same time, manufacturing companies report that over half their capital expenditures in the next four years will be for modernization of equipment and introduction of new processes. Thus the preponderant share of new investment will be based on developments growing out of research.

A New Kind of Prosperity

The keen interest of U. S. business firms in scientific research points the way to a new kind of prosperity for our economy—a prosperity based on deliberate creativeness. As long as we can create new products that will offer better value to consumers or cut costs to manufacturing firms, business will continue at a high level—not at fever pitch, perhaps, and it is to be hoped not at an inflationary pitch. But based on a steady stream of new products and processes, we can have a high level of general prosperity that defies the old laws of boom and bust.

It's Not Automatic

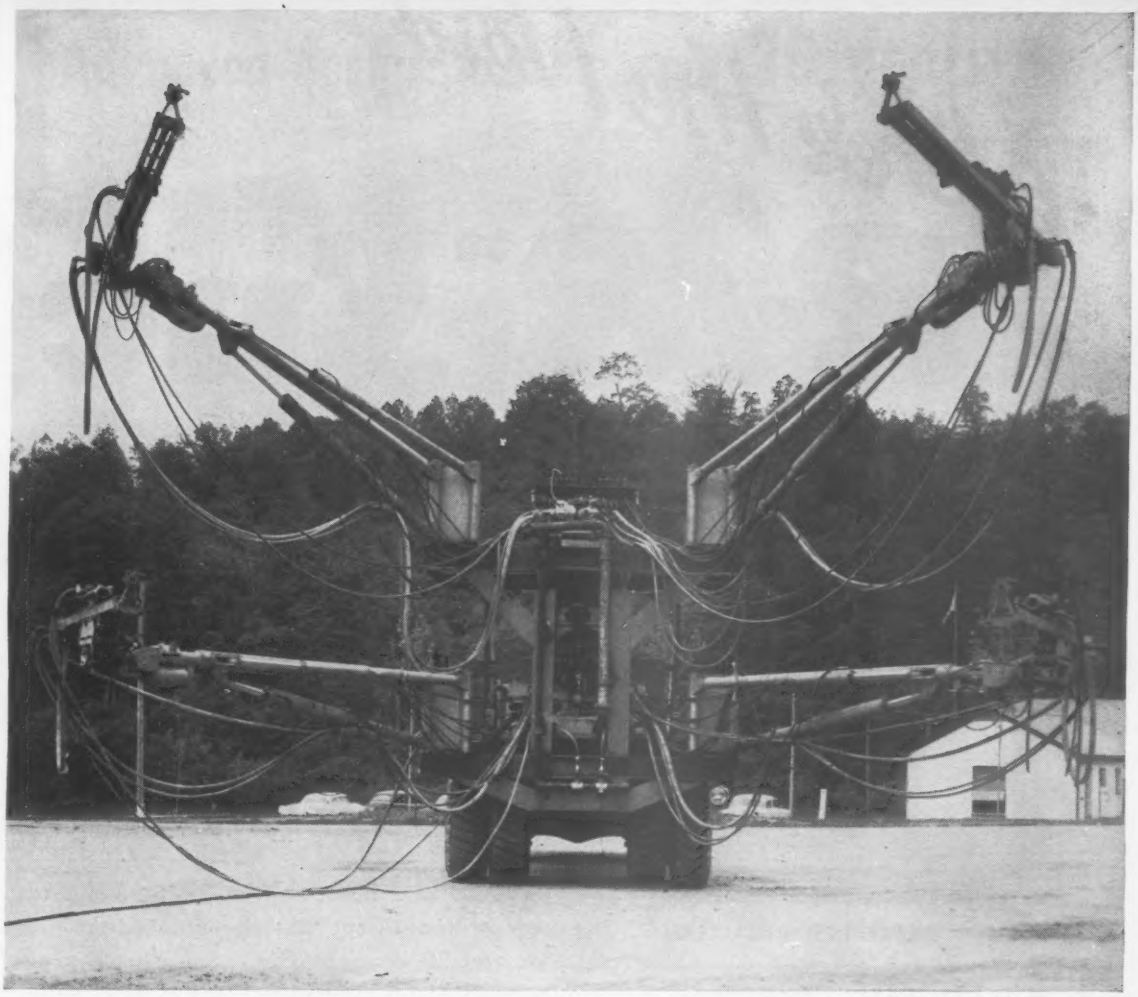
Of course, there is no guarantee. New products do not spring up by magic as the medieval alchemists hoped they would. They are found as the result of long and expensive effort in laboratories and pilot plants. This effort requires an increasing number of trained scientists and engineers. In 1957 alone, manufacturing companies report they will need 7% more of these highly trained people in research and development. And by 1960, they will need an additional 15% to carry out planned research programs.

The effort to maintain prosperity — as well as the national defense effort — will depend increasingly on this supply of scientific and technical personnel. But if we can supply the people, industry now has the plans for a research effort that will put an end to the spectre of idle plants and idle workers.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nation-wide developments. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

Donald C. McGraw
PRESIDENT

McGRAW-HILL PUBLISHING COMPANY, INC.



Head-on view of a 4-boom jumbo. Note wide reach of the Gardner-Denver hydraulic booms.

Build your own jumbo with
GARDNER-DENVER COMPONENTS

Tailor your truck, tractor or rail mounted jumbo with Gardner-Denver booms, feeds and drills. You get just what you need for each dollar invested. Gardner-Denver offers a wide selection in:

- **HYDRAULIC BOOMS,** completely automatic and remotely controlled for mounting on your jumbo.
- Manufactured in two sizes and types (tunnel and rugged types), TRIPODS for mounting heavier drifter equipment with the longer chain feed.
- **POWERFUL ROCK DRILLS** in 3-, 3½-, 4 and 4½-inch sizes. Long chain or screw feed mountings.
- **SECTIONAL DRILL RODS** and couplings for long-hole drilling. Gardner-Denver Ring Seal Shank.
- **REMOTE CONTROLS** located at any point along the boom or on the jumbo chassis. With G-D Remote Controls, one operator moves booms into position and controls complete drilling operation without leaving his station.

Gardner-Denver engineers will work with your staff and powderman to design your jumbo to the job.

ENGINEERING FORESIGHT—PROVED ON THE JOB
IN CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
Gardner-Denver Company, Export Division, 233 Broadway, New York 7, New York
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Here's the New R-18 "Euc"

that sets a new high in Rear-Dump Production and Performance!

DUMPS FAST AND CLEAN

Smooth body interior and tapered rear chute assures clean shedding of the load well back of the rear wheels—an important feature for dumping into hoppers or over the edge of waste banks.

STAY ON THE JOB LONGER

Rugged body and frame withstand the impacts of loading, hauling and dumping heavy excavation in construction, mine and quarry service.

More Work-ability and Minimum Maintenance

Designed and built for heavy off-the-highway service, Rear-Dump "Eucs" have paced the field for over 20 years. They've reduced hauling costs on hundreds of the toughest jobs in mine, quarry and construction work . . . delivered "plus" performance year in and year out.

This Model R-18 incorporates the engineering advances, the easy operation and maintenance features, resulting from unequalled field experience with other Euclid Rear-Dumps of 10 to 50 tons capacity. It provides the dependable work-ability that means more payloads per day at lowest cost per ton or yard moved.

Have your Euclid dealer give you full details on this new 18-ton Rear-Dump and the complete line of Euclid earth moving equipment. He'll be glad to show you why so many users have proved for themselves that ***Euclids are your best investment.***

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

The R-18 is your BEST BET for Lower Hauling Costs!

Advanced design results from 20 years of leadership

Some of the* OUTSTANDING FEATURES *of the R-18

- 10½ yd. body 36,000 lb. payload
- 218 h. p.
- loaded top speed of 27 m.p.h.
- hydraulic booster steering
- air assist clutch
- free floating springs
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Double-acting 3 stage Euclid hoist and hydraulic system gives the operator fast, positive control of the body position at all times. Dumping angle of the body, in fully raised position, is 68°. Body, frame and hoist are designed and built as an integral unit.

SPEED AND STABILITY

The 5 speed transmission and Euclid planetary axle provide a top speed of 27 m.p.h. with full 18 ton payload. Free floating Euclid spring suspension gives maximum stability empty or loaded under all road conditions... permits faster safe travel speeds.

EASY OPERATION

Full width cab offset to left for maximum vision, air assist clutch, booster steering, 218 h.p. engine, fast acting hoist, free floating springs and fully adjustable seat contribute to driver comfort and easy operation.

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

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In addition to free form erection drawings, here are other benefits enjoyed by owners of EFCO Steel Forms for concrete construction:

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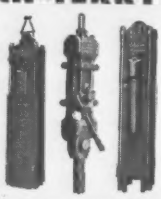

Now made in complete standardized line of 11 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors. Also Sand Drain Equipment and Steam Generators.

Write for free descriptive Bulletins.

Also builders of coal and ore bridges and unloaders, and specially designed machinery.

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Ohio Sanitary Sewer Bid With Seven Alternates

Three sanitary sewers for the City of Marion, O., include one job bid with seven alternates. This $390,639 contract for 2,942 lin ft of trunk sewer was awarded on the alternate for all reinforced concrete pipe in both tunnel and open cut. Prices are reported also on the other alternates: all vitrified clay pipe, monolithic concrete pipe in tunnel with either reinforced concrete or vitrified clay pipe in the open cut section and all sewer in tunnel using any of the three types of pipe.

This contract to R. H. McManus & Co., Detroit, Mich., is 27% below the only other bid. The two other contracts include the $87,744 interceptor sewer let to Frank Verderber Inc., Toledo, O., and the $21,159 relief sewer to Tiffin Excavation Contractors, Tiffin, O. Floyd G. Browne & Associates, Marion, are the consulting engineers.

All 30 in. pipe is laid in limestone formation. Class A concrete must test at a compressive strength of 3,500 lb psi in 28 days.

Minimum wage rates range from $2.35 for unskilled labor to $3.50 for skilled labor.

Indiana Avenue Trunk Sewer

All Reinforced Concrete Pipe in Tunnel and Open Cut

1C R. H. McManus & Co., Detroit, Mich..... $390,639
2 Haddad Constr. Co., Inc., Columbus, Ohio.... 534,335

Bids: 3-7-57 Items	Unit	Quantity	Unit Prices 1C	2
Excavation, trench	cy	3,700	$15.00	$4.00
structure	cy	300	18.00	7.00
rock	cy	2,450	36.00	30.00
Foundation cushion	cy	150	11.00	5.00
Conc, cl A, addnl	cy	5	50.00	60.00
cl B, addnl	cy	5	45.00	40.00
Portland cement, addnl	bbl	5	10.00	40.00
Steel, reinforcing, addnl	t	0.5	500.00	400.00
Sheeting & timbering lip	Mfbm	1	200.00	120.00
VCP, SS, 10"	lf	60	5.00	40.00
RCP, C-76, 30" in tunn, 0+3—10+35,	* lf	1,910	26.00	140.00
C-75	* lf	1,032	138.00	140.00
Borrow	cy	700	5.00	5.00
CMP, 10"	lf	20	8.00	10.00
8"	lf	40	7.00	10.00
Catch basin, relocate	ea	4	210.00	150.00
Manhole, exist, remodel	ea	7	200.00	150.00
std, 5' dia	lf	26	55.00	50.00
single drop, 5' dia	lf	160	70.00	60.00
double drop, 5' dia	lf	20	80.00	70.00
Base crse, conc, 8", restore	sy	75	15.00	9.00
Macadam, water bound, 8", rest	sy	1,500	15.00	5.00
Surf crse, brick, restore	sy	75	20.00	9.00
T-35, 2" restore	sy	35	5.00	3.00
Sidewalk, restore	sf	130	0.60	1.00
Curb & gutter, restore	lf	150	5.00	5.00
** Alternates				
VCP, ES, 30"	lf	1,910	32.00	145.00
in tunnel, sta 0+03-10+35	lf	1,032	148.00	145.00
Totals	1	$412,419	2	$549,045
VCP, ES, 30"	lf	1,910	32.00	145.00
Monolithic conc pipe, 30", in tunnel, sta 0+03-10+35	lf	1,032	142.00	130.00
Totals	1	$406,227	2	$533,465
RCP, C-76, 30"	lf	1,910	26.00	140.00
Monolithic conc pipe 30", in tunnel, sta 0+03-10+35	lf	1,032	142.00	130.00
Totals	1	$394,767	2	$524,015

Alternates for Monolithic Concrete or Vitrified Clay or Reinforced Concrete Pipe, all in Tunnel

1 Haddad Constr. Co., Inc., Columbus, Ohio
Alternate for Monolithic Concrete Pipe..... $408,085
Vitrified Clay Pipe..... 452,215
Reinforced Concrete Pipe..... 437,505
2 R. H. McManus & Co., Detroit, Mich.
Alternate for Monolithic Concrete Pipe..... 452,769
Vitrified Clay Pipe..... 470,421
Reinforced Concrete Pipe..... 441,001
3 Carrol C. Plumley, Marion, Ohio
Alternate for Vitrified Clay Pipe..... $537,270
Reinforced Concrete Pipe..... 534,328

Bids: 3-7-57 Items	Unit	Quantity	Unit Prices 1	2
Excavation, trench	cy	50	$5.00	$4.00
structure	cy	300	7.00	18.00
rock	cy	230	30.00	36.00
VCP, SS, 10"	lf	60	40.00	5.00
Monolithic conc pipe, 30", in tunnel, sta 0+03-10+35*	lf	1,032	130.00	142.00
sta 10+35-29+41*	lf	1,910	130.00	144.00
Manhole, exist, remodel	ea	7	150.00	200.00
std, 5' dia	lf	26	50.00	55.00
single drop, 5' dia	lf	160	60.00	70.00
double drop, 5' dia	lf	20	70.00	80.00
Base crse, conc, 8", restore	sy	20	10.00	15.00
Macad, water bnd, 8", rest	sy	45	5.00	15.00
Surf crse, brick, restore	sy	20	10.00	20.00
** Alternates				
VCP, SS, 30", in tunne				
sta 0+03-10+35	lf	1,032	145.00	148.00
sta 10+35-29+41	lf	1,910	145.00	150.00
RCP, 30", in tunnel				
sta 0+03-10+35	lf	1,032	140.00	138.00
sta 10+35-29+41	lf	1,910	140.00	140.00

Forest Lawn Blvd. Interceptor Sewer

1C Frank Verderber Inc. & Russel Williams, Toledo, Ohio..... $87,744
2 Haddad Constr. Co., Inc., Columbus, Ohio..... 96,195
4 R. H. McManus & Co., Detroit, Mich..... 118,410

Bids: 3-7-57 Items	Unit	Quantity	Unit Prices 1C	2
Excavation, trench	cy	3,760	$0.65	$3.00
structure	cy	245	0.85	4.00
rock	cy	1,370	30.00	25.00
Foundation cushion	cy	150	3.10	4.00
Conc, cl A, addnl	cy	5	80.00	50.00
cl B, addnl	cy	5	80.00	30.00
Portland cement, addnl	bbl	5	38.60	40.00
Steel, reinforcing, addnl	t	0.5	285.00	400.00
Sheeting & timbering lip	Mfbm	1	.....	100.00
VCP, ES, 24"	lf	6	11.41	25.00
SS, 8"	lf	360	5.40	3.00
RCP, C-76, 30" *	lf	1,795	17.25	22.00
Borrow	cy	350	1.50	2.00
Manhole, std, 5' dia	lf	50	55.00	35.00
double drop, 5' dia	lf	18	115.00	50.00
std, 4' dia	lf	65	45.00	40.00
Macad, water bnd, 8", rest	sy	100	3.50	5.00
Loan & seeding	sy	1,450	0.55	0.70
** Alternate				
VCP, ES, 30"	lf	1,795	23.02	25.00
Totals	1	$98,102	2 $101,580	4 $130,975

Forest Lawn Blvd. Relief Sewer

1C Tiffin Excavating Contractors, Tiffin, Ohio..... $21,159
2 Haddad Constr. Co., Inc., Columbus, Ohio..... 22,455
6 G. M. Scott, Inc., Shelby, Ohio..... 31,361

Bids: 3-7-57 Items	Unit	Quantity	Unit Prices 1C	2
Excavation, trench	cy	1,500	$3.95	$4.00
rock	cy	30	22.00	30.00
structure	cy	160	4.95	5.00
Foundation cushion	cy	20	8.00	4.00
Conc, cl A, addnl	cy	5	55.00	50.00
cl B, addnl	cy	5	75.00	30.00
Portland cement, addnl	bbl	5	30.00	40.00
Steel, reinforcing, addnl	t	0.5	400.00	400.00
Sheeting & timbering lip	Mfbm	1	135.00	100.00
Service connections	ea	10	100.00	140.00
VCP, ES, 10"	lf	915	4.15	3.00
SS, 10"	lf	545	3.69	3.00
CMP, 21"	lf	10	10.00	20.00
18"	lf	10	10.00	20.00
8"	lf	40	8.00	20.00
Manhole, std, 4' dia	lf	40	28.00	30.00
single drop, 4' dia	lf	15	35.00	50.00
double drop, 4' dia	lf	12	42.00	60.00
Base crse, conc, 8", restore	sy	100	5.50	8.00
Macad, water bnd, 8", rest	sy	500	3.50	5.00
Surf crse, brick, restore	sy	40	8.00	9.00
T-35, 2", restore	sy	60	3.50	3.00
Sidewalk, restore	sf	25	1.25	1.00
Curb & gutter, restore	lf	12	4.00	5.00
Loam & seeding	sy	200	0.50	1.00

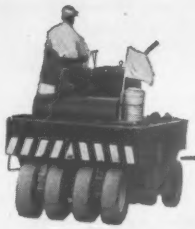
Work started: 3-25-57 To be completed: 9-28-57
Liquidated da mages: $50 per day per contract

The answer to lower roadbuilding costs...

The right machine at the right stage

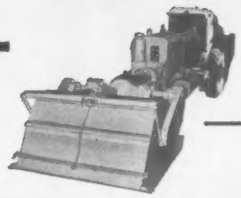
BROS SELF-PROPELLED ROLLER

Sealcoat, surface and subbase compaction work accomplished in fastest time possible with the BROS SP-54 roller. Infinite speed range from 0 to 18 MPH, both forward and reverse; torque converter drive; full oscillation of ALL wheel pairs; positive chain drives to both rear wheel pairs; engine, gasoline (or diesel) produces 50 usable horsepower at 2000 RPM; smooth automotive-type hydraulic steering.



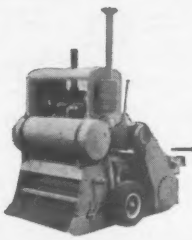
BROS ROTO-MIXER

In-place mixing and blending of surface, subbase and subgrade materials to 12″ depth with heavy duty BROS Roto-Mixer. Solid steel rotor shaft; positive equally loaded chain drives to both ends of shaft; simplified split-sleeve type tool plates. Hood and rotor each power hydraulically controlled.



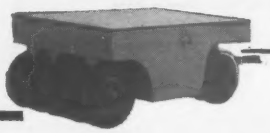
BROS PREPARATOR

In-place reduction of subbase aggregates from over-size pit or bank-run materials. Reduces up to 400 cu. yds. per hour to acceptable gradation percentages. Also prepares scarified asphalt materials to proper sizes for re-use.



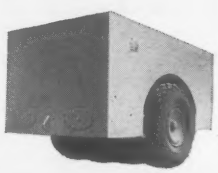
BROS TOW-TYPE ROLLERS

For surface and subbase and shallow lift subgrade compaction. 9 and 13 ton capacities; ½″ overlapping wide face tires for full coverage; full oscillation of all wheels. Wobble-wheel* action adds side-to-side weaving motion to knead out voids and material bridging.



BROS ROLL-O-PACTOR

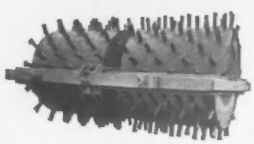
35, 50 to 100-ton. Heavyweight champion for compacting subgrade, earthfills, airfields and dams in lifts up to 24″. 19° wheel oscillation. Tire pressures up to 150 psi. Heavy duty wheel assembly and bearings.



BROS TAMPING ROLLERS

For subgrade and embankment constructions of non-granular soils. Capacities range from 133 to 725 psi foot pressures. Sheepsfoot and Diamondfoot. Large tamping face and relief shank design provide maximum compaction pressure with the least drag when rolling at all depths. Get full information and specifications on any of these machines from your nearest BROS Distributor or write us.

**Patented and copyrighted by BROS Incorporated.*



BROS

Road Machinery Division

BROS *Incorporated*

1057 Tenth Ave. S.E.
Minneapolis 14, Minnesota

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron and Steel Products: Last, May 16; Next, June 13
- Wood Products, Glass, Explosives, Chemicals: May 23; Next, June 20
- Clay Products, Lime, Plaster, Paint, Roofing: Last, May 30; Next, June 27
- Wage Rates, Building Board, Lath, Insulation: Last, May 30; Next, June 27

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.* truckload del.* per block		CONCRETE Ready Mixed 1:2:4 del. 80 cy & over
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	
Atlanta	$4.31a	$3.90a	$3.57	$2.18	$2.28	$2.50‡	$2.18	$2.33	$1.55	$1.65	$0.175	$....	$13.75g
Baltimore	4.42c	4.01c	3.49c	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18	.18a	12.95
Birmingham	4.08	3.15af	....	2.53a	2.53a	2.13a	2.75	2.75	1.53	1.65	.18	.18	12.55
Boston	5.25ha	4.67a	4.79a	3.00a	3.00a	3.00a	1.75a	1.85a	....	....	.23	.275a	15.00A
Chicago	4.13a	3.72a	3.78	3.78‡b	3.78‡b	4.13‡b	3.95‡b	3.95‡b	2.25‡	2.25‡	.25	.255	13.50
Cincinnati	4.46c	4.05c	4.03	2.29‡c	2.34‡c	2.34‡c	2.64‡c	2.64‡c	1.89	1.89	.19	.24a	13.25
Cleveland	N.A. in C.L.	3.74	3.88a	2.15ef	1.95f	1.85	4.50‡a	4.50‡a	3.35‡a	3.35‡a	....	.22	16.15
Dallas	3.55a	3.15a	3.43	2.60	2.65	1.98	2.43	2.63	....	....	....	.27	11.25
Denver	4.68a	4.19a	4.69	1.90	2.05	1.30	....	....	....	....	.22	.245a	10.70
Detroit	4.18a	3.60ag	3.73	4.50‡b	4.50‡b	4.25‡b	3.75‡	3.75‡	3.50‡	3.50‡	.23	.24a	14.20
Kansas City	4.45i	3.96a	4.25	....	....	1.70‡a	2.00‡a	2.00‡a	....	....	.21a	.24c	13.50
Los Angeles	5.12ah	4.68ah	5.60	2.41‡a	2.76‡a	2.41‡a	2.41‡a	2.46‡a	....	....	.14fm	.24m	12.95h
Minneapolis	4.40a	4.00a	4.07	2.70‡ag	2.70‡ag	1.60‡ag	3.25‡ag	3.25‡ag	....	....	.19	....	14.30f
Montreal	3.11d	2.85d	3.50	1.96‡a	2.30‡a	2.25‡a	1.95‡i	2.20‡i	2.00	2.00	.20	.20a	10.80ak
New Orleans	3.75a	3.45a	3.70	2.44	2.44	2.00	....	....	1.45	1.65	.275	....	13.65
New York	4.79a	4.38a	3.88	3.05‡k	3.05‡k	2.30‡k	2.90‡l	2.90N	....	....	.25	.30b	16.75an
Philadelphia	4.49/4.84‡a	4.09/4.46‡a	3.70/4.33‡	2.85‡ep	2.85‡ep	2.35‡ep	2.70‡	2.80‡	2.00	2.35	.24/.30	....	13.80de
Pittsburgh	4.15a	3.76a	3.75	2.40‡	2.40‡	2.20‡	2.60‡	2.60‡	2.15	2.15	.25d	.31	14.00
St. Louis	4.01/4.33c	3.61/3.93c	3.86/4.18	3.25am	3.10am	2.40/3.10am	1.60j	1.70j	....	....	.24	.30c	12.40/12.90
San Francisco	3.94c	3.54c	4.38c	2.02	2.02	2.12	2.17	2.17	....	....	.24	.24cl	13.75c
Seattle	4.30a	3.75a	....	4.00‡bm	4.00‡bm	4.00‡bm	4.50‡bm	4.50‡bm	....	....	.26	.37c	13.30j
Toronto	4.03	4.03	4.03	2.40‡	2.40‡	2.05‡	2.20	2.20	2.20	2.20	.25	.29c	15.25

‡ Delivered. * Prices incl. dealers discount except as noted.

CEMENT: *a Less 10¢ disc, 15 days. *b Less 2% disc, 15 days. *c Less 10¢ disc, 10 days. *d Truckload lots, deliv. 10¢ disc, 20 days. *e Truckload lots *f Fob mill, add $13.09 to $20.31 per car switching charges *g fob mill + freight *h LCL. *i Less 2% disc, 10 days

SAND GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons or more. *e ½". *f Pea gravel. *g Less 5% for cash. *h Less than 5 tons. *i Plus 5% mun. & prov. tax *j F.o.b. quarry. *k Barge lots easl. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *o 1-3 mi zone. *p Add 10¢ for ea. add'l mi zone.

CONCRETE BLOCK: *a Cinder *b Waylite. *c Haydite. *d Celocrete *e 8¼ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *i Less 2% for cash *j F.o.b. plant San Rafael. *m F.o.b. yard.

READY MIXED CONCRETE: *a 6 cu. yds. or over del. Man. *b 28 cu. yds or more *c 10-100 cy. brackets. *d 1-3 mi. zone. *e 2,000 lb comp. *f 2,500 lb. comp. *g Less 25¢ disc, 15 days. *h Less 50¢ for cash. *i 5% off for cash. *j 2% off for cash. *k Federal tax included. Add 5% mun. & prov. *l 1:2¼:3½. *m F.o.b. yard *n Plus escalator clause. *o Add 15¢ for ea. add'l 3-mi zone.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for paymen within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 40¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.30†	Buffington, Ind	$3.25†	Steelton, Minn	$3.45†	Muskegon, Mich	$3.30†	Toledo, O	$3.30†
Clinchfield, Ga	3.30†	Independence, Kan	3.10†	Leeds, Ala	3.15†	Saginaw, Mich	3.30†	Milwaukee, Wis	3.35†
Kingsport, Tenn	3.30†	Hannibal, Mo	3.35†	Duluth, Minn	3.45†	Wyandotte, Mich	3.30†	Green Bay, Wis	3.35†
West Des Moines, Iowa	3.35†	Northampton, Pa	3.35†	Hudson, N. Y	3.35†	Buffalo, N. Y	3.40†	Ironton, O	3.30†
Nazareth, Pa	3.35†	Universal, Pa	3.45†	Alpena, Mich	3.20†	Oswego, N. Y	3.45†	Montreal City	3.56†
Bath, Pa	3.35†	Waco, Tex. (+ 10¢ tax)	3.35†	Detroit, Mich	3.30†	Cleveland, O	3.35†	W. Winfield, Pa	3.45†
Lesley, Pa	3.35†	Giant, S. C	3.35†	Howes Cave, N. Y	3.35†	Alsen, N. Y	3.35†	Security, Md	3.35†

† *Prices to hold for second quarter of* 1957.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 80,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	.....	.....	.....	$30.50	$45.00	$0.15	$0.26	$0.125Pw	$0.28Pw	$0.14	$0.125	$0.30
Baltimore	180.00‡	.....	.....	23.00i	.....	.09fs	0.185i	.10iwE	.19iwE	.10i	.105i	0.195i
Birmingham	.....	63.00i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.00ap	46.00ap	24.00as	46.00as	.11aFw	.24a•Fw	.11ao	.174aGo	.25aGo
Chicago	180.00‡	90.00‡b	3.95/4.00‡j	24.05b	34.05b	21.40bs	31.40bs	.11bwH	.19bwH	.085b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	.....	83.00d	6.30g	25.00A	.....	25.00A	.....	.1115AwF	.....	.....	.1115AG	.21AG
Dallas	s	40.00	s	26.35	45.39	.1116	.1944	29.80	51.40	.1080	.1116	.1994
Denver	.....	80.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	113.00	.....	32.45	.....	31.45s	.....	.1338wI	.....	.1133	.....	.25
Kansas City	s	s	s	21.00cl	.....	21.00s	.....	.0975cwJ	.....	.085c	0.125c	.....
Los Angeles	s	.....	s	18.50dmz	.....	18.50dmz	.....	20.00dz K	.....	19.00ds	.09j	.19j
Minneapolis	.....	.....	3.73h	29.50	.....	29.50	.....	0.125w	.....	0.115	.134	.....
Montreal	s	s	s	32.50n	44.80n	.176n	.226n	18.70nuE	23.70nuE	.154n	.242ns	.270ns
New Orleans	.....	.....	.....	17.60s	.....s	17.60es	.....s	.085ew	.....s	.085E	.09BL	.....
New York	.....	.....	3.70f	26.89wCD	47.32qD	26.89wCD	47.32wD	.1273wCDF	.2139wDF	.....	.1273CD	.2168D
Philadelphia	175/185	110/120	4.06	22.00	.....	22.00	.....	.095uF	.....	.095	.....	.....
Pittsburgh	185.00	48.00	4.60	27.00	38.00	.10	.21	27.00E	40.00E	.098	.11	.224
St. Louis	.....	.....	.....	20.90f	.....	.1825	.....	.1035fwM	.....	0.165	.825	.....
San Francisco	.....	70.00s	.....	23.00g	40.00g	23.00gks	40.00gks	24.00gN	41.50gN	23.75eg	.10y	.19y
Seattle	.....	.....	.....	27.00s	40.50h	27.00s	.....	28.50K	.....	24.75hs	.10h	.11hr
Toronto	.....	.....	4.50	40.10	59.38	0.2045	0.2445	0.214w	0.258w	0.198	0.216	.271

‡ Delivered.

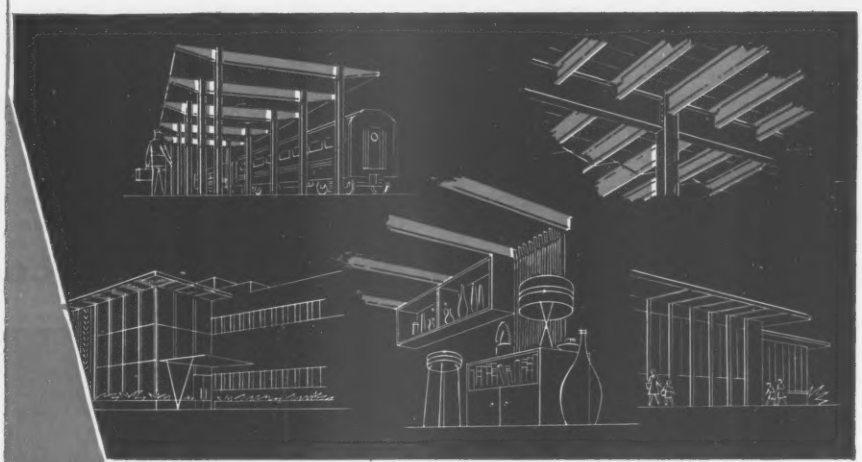
PAVING BRICK & BLOCK: *b 3 x 4 x 8. *c 2¼ x 8¼ x 4. *d LCL, truck deliveries. *e Not used. *f 2" interior 6¢ treat. *g 3" *h 2" tr, 8¢ *i 3 x 3½ x 8½. *j 2½", 6 lb. tr.

ASPHALTS: *a Price at plant, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segunda. *e F.o.b. Baton Rouge. *f F.o.b. Wood River, Ill. *g F.o.b. Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50-110 penetr. *l Less than 100 penetr. *m 40/80 penetr. *n Fed. tax included; add 5% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60/70 penetr. *q 40/85 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 85/200 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks. *y F.o.b. Oakland *z F.o.b. Edmonds *A F.o.b. refinery, Cleveland. *B F.o.b. Destrehan, La. *C Bulk. *D Prices based on transporting to Manhattan via truck. *E RC. *F Also RC. *G Also MS, SS. *H RC 0-5 incl. *I MC 4. *J MC, RC .0675. *K MC 3, 4 & 5. *L MS. *M MC 1-5, RC 1-5, .089. *N MC 3. *O Truckload *P F.o.b. refinery Savannah: $0.09/gal., tank cars; $0.20/gal., drums.

Junior Beam

construction

Junior Beams, in 6", 8", 10" and 12" sizes, are available from the mill and from principal fabricators and warehouses across the country. Junior Beams are produced exclusively by J&L. They speed erection and can be positioned with minimum manpower and equipment. They can help you cut costs in many types of architectural designs.



Junior Beam construction offers versatility for uses in residential and industrial construction, schools, hospitals, commercial buildings. Further information can be obtained by writing to the Jones & Laughlin Steel Corporation, Dept. 428, 3 Gateway Center, Pittsburgh 30, Pa.

J&L STEEL

Jones & Laughlin

... a great name in steel

The new Farmers Union Central Exchange Office Building at South St. Paul, Minnesota. LEHIGH MORTAR CEMENT was used with brick, concrete block, glazed tile, tile and granite.

contractor reports ECONOMY, SPEED, QUALITY
WITH LEHIGH CEMENTS

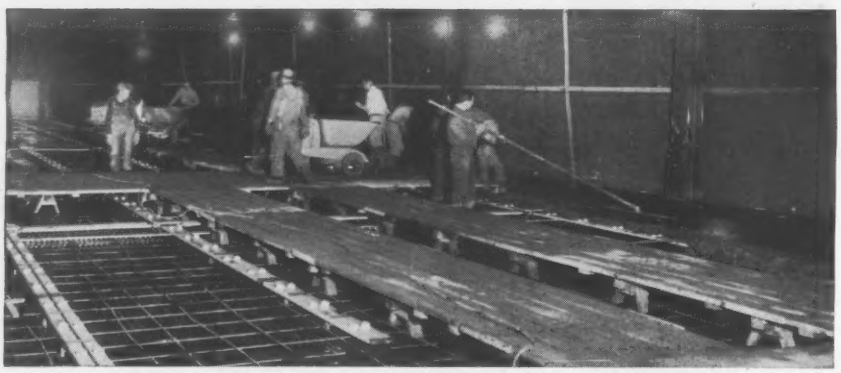
"As you know," writes Mr. Frank Cahill of Graus Construction Company, "we are subject to long and very cold winters. Therefore, we chose to use Lehigh Early Strength Cement on this job. It proved to be an excellent choice as we were able to eliminate costly overtime in finishing, reduce curing time and put finished concrete into early use.

"For all masonry, we used Lehigh Mortar Cement. As masonry foreman Mike Christenson says, 'Lehigh Mortar Cement performs well in any weather and excells in workability and high bond strength.'"

Whatever your cement requirements, there are Lehigh Cements to help you produce quality work with speed and economy.

- LEHIGH EARLY STRENGTH CEMENT
- LEHIGH PORTLAND CEMENT
- LEHIGH MORTAR CEMENT
- LEHIGH AIR-ENTRAINING CEMENT

LEHIGH PORTLAND CEMENT CO. *Allentown, Pa.*



Placing concrete floor made with LEHIGH EARLY STRENGTH CEMENT. Quick-curing concrete permitted early use of this floor for storage of construction materials.

ARCHITECT:
Ellerbe & Company, St. Paul, Minnesota

CONTRACTOR:
Graus Construction Co., Hastings, Minn.

SUPPLIER OF MORTAR AND READY MIX CONCRETE:
Standard Building Material Co., South St. Paul, Minn.

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, S. N. NOLAN, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **Me., Limestone**—LIBRARY—BA On Or About 6/19—U. S. Eng., 150 Causeway St., Boston 14, Mass., library, Loring Air Force Base, ENG-19-016-57-235. CD 8/23.

† **Massachusetts**—BUILDINGS—BA On Or About 6/19—U. S. Eng., 150 Causeway St., Boston, Zone 14, addni. buildings, Nike Battery 17, Boston Defense Area, Nahant, ENG-19-016-57-221. $200,000-$300,000. Plans deposit $25.

Massachusetts—TACTICAL FACILITIES—BA On Or About 6/21—U. S. Eng., 150 Causeway St., Boston, Zone 14, rehabilitation of Tactical Facilities, in Boston Defense Area, at Newton, Belmont, Lynn and Fort Dawes, ENG-19-016-57-237. $50,000-$75,000. Plans deposit $10.

† **Me., Bangor**—SEWAGE TREATMENT PLANT—BA 6/24—U. S. Eng., 150 Causeway St., Boston 14, Mass., sewage treatment plant, FY-57, Dow Air Force Base, ENG-19-016-57-26. $200,000-$300,000. Plans deposit $15. CD 5/24.

BUILDINGS—BA

▲ **Conn., Bristol**—SCHOOL—BA 6/14—Town of Bristol School Bldg. Comn., Town Hall, Bristol High School addns., alterations, and athletic field. $3,600,000. Plans deposit $135. CD 7/24.

Mass., Concord—SCHOOL—BA 6/14—Town, General Bldg. Comn., Town House, Bedford St. Elementary School, $483,000. Nine Acre Corner Elementary School, off Powder Mill Rd., $460,000. Plans deposit $100 each., refundable to bidders. Hugh A. Stubbins Assocs., 806 Mass. Ave., Cambridge, engrs. CD 11/5.

Mass., Gloucester—HOSPITAL—BA 6/20—Addison Gilbert Hospital, 298 Washington St., hospital alterations, addns., 298 Washington St. $350,000. James H. Ritchie & Assocs., 135 Clarendon St., Boston, Mass., archts. CD 2/21/56.

BUILDINGS—SLC

Conn., Bridgeport—STORE—D. M. Read Co., 1050 Broad St., soon lets contract, expanding store, incl. addition and penthouse Broad St. $500,000. Fletcher-Thompson, Inc., 211 State St., archt. CD 4/25.

Conn., Stamford—Y.W.C.A. ADDN.—Young Women's Christian Assn., Summer St., soon lets contract Y.W.C.A. bldg addn., alterations, Summer St. $345,-000. Francis L. S. Meyers, 182 Summer St., archt. CD 12/13, under LB.

HEAVY CONSTRUCTION—LB & CA

MAINE—State Hy. Comn., Augusta,
Forest Frederick, Pittsfield, Me., CA $138,908, Walkers Bridge in Brownville, Fed. Aid Proj. S-0287 (1), Piscataquis Co. Bids May 15. CD 5/7.

† **Welbilt Constr. Co. Inc.,** 815 Washington St., Newton, Mass., CA **$246,389,** est. $249,810 army reserve training center, Cottage St., Portsmouth Air Force Base, ENG-19-016-57-130, PORTSMOUTH, N. H. U. S. Eng., 150 Causeway St., Boston, Mass. Bids Apr. 5. CD 4/11, under LB.

A. J. Martini, Inc., 9 Jerome St., Medford, Mass., CA **$200,000.** 80x120 ft. hangar, municipal airport, BEVERLY, MASS. Sylvania Electric Products, Inc., 1740 Broadway, New York, N. Y., Barnes & Jarnis, Inc., 261 Franklin St., Boston, Mass., engr.

† **P. & M. Constr. Co., Inc.,** 617 Plymouth St., Abington, Mass., CA **$668,000,** Elementary SCHOOL, No. 58-C-FED-4-AB, Otis Air Force Base, FALMOUTH, MASS. U. S. Regional Eng., Housing & Home Finance Agency, 346 Broadway, New York City, N. Y. Walter M. Gaffney Assoc., West Main St., Hyannis, Mass., archts. CD 5/21.

Juno-Maske Constr. Co., Inc., 1169 Main St., East Hartford, Conn., LB **$175,293** (5 bidders) drainage facilities, Cottage Grove Basin, flood control of Beamans Brook and Meadow Brook, BLOOMFIELD, CONN. Town, Town Hall, Bloomfield, Conn. Bids May 22. CD 5/10.

N. J. Donci, 24 Stiles Lane, North Haven, Conn., CA **$45,635,** drainage, Foote St., HAMDEN, CONN. Town of Hamden, Town Hall, Hamden, Conn. Awarded May 17.

Atlantic, Gulf & Pacific Co., 15 Park Row, New York, N. Y., LB **$435,528** (2 bidders) Proj. BI-FC-1B and BI-FC-7, placing sand-fill, Sherwood Island State Park and Burial Hill, WESTPORT and GREENS FARMS, CONN. State P. Wks. Dpt., 165 Capitol Ave., Hartford, Conn. Bids May 15. CD 5/8.

BUILDINGS—LB & CA

▲ **Daniel O'Connell's Sons, Inc.,** 480 Hampden St., Holyoke, Mass., CA **$1,667,097** HOSPITAL addn., incl. Alt. 7, WESTFIELD, MASS. Noble Hospital, 105 W. Silver St., Westfield, Mass. Bids May 17. CD 5/20, under LB.

E. W. Larkin Co., 31 Elm St., Springfield, Mass., CA **$100,000,** WAREHOUSE addn., WEST SPRINGFIELD, MASS. Breck Realty Corp., c/o Alderman & MacNeish, archts., 594 Riverdale St., West Springfield, Mass.

Grande & Son, Inc., 175 Maplewood St., Malden, Mass., CA **$889,942.** M-808, SCHOOL BLDG., STATE SCHOOL, Chauncy St., Boston, WRENTHAM, MASS. Commonwealth of Mass., Dpt. Mental Health, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. CD 5/9, under LB.

Paterson Constr. Co., 66 Anderson St., New Haven, Conn., CA Est. Approx. **$350,000.** OFFICE and DIAL BLDG. addn., Main St., BRANFORD, CONN. Southern New England Telephone Co., 227 Church St., New Haven, Conn. Douglas Orr, 111 Whitney Ave., New Haven, Conn., archt. Awarded May 17. CD 3/27.

▲ **Town of Vernon, School Bldg. Comn.,** Town Hall, Vernon, Conn., cancelled bids to have been opened May 16, Vernon HIGH SCHOOL, VERNON, CONN. Est. $2,000,000 CD 4/16.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† **New Jersey and New York**—AAA FACILITIES—BA 6/11—U. S. Eng., 111 E. 16 St., New York 3, N. Y., imprvt. program, Special AAA Facilities, FY 1957, Mountain View, and Ramsey, N. J. and Orangeburg, Kesnisco and Lido Beach, N. Y., ENG-30-075-57-483. CD 5/16.

† **N. Y., Niagara Falls**—ELECTRONICS INSTALLATION—BA 6/11—Dist. P. Wks. Office, Third Naval Dist., Federal Office Bldg., 90 Church St., New York, Zone 7, electronics installation, U. S. Naval Air Station NBy 8272, Spec. No. 8272/57.

† **D. C., Wash.**—SPRINKLERS—BA 6/12—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash. D. C., installing sprinklers, Bldg. 4 and 19 Naval Security Station, NBy 8372. CD 5/8, under LB.

† **Md., White Oak**—SPRINKLER SYSTEM—BA 6/12—Dist. P. Wks Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., sprinkler system Naval Ordnance Laboratory, NBy 11393.

† **New Jersey and New York**—TACTICAL FACILITIES—BA 6/12—U. S. Eng., 111 E. 16 St., New York 3, N. Y. tactical facilities impvs. FY 57, New York Defense Area, Fort Hancock, Leonardo and Crawford Corners, N. J. and Lloyd Harbor and Amityville, L. I., N. Y. Inv. No. ENG 30-075-57-488. $100,000-$150,000. Plans deposit $20.

Pa., Phila.—BA 6/13—Dpt. Streets, Dpt. Procurement, City Hall Annex, grading, asph. paving; grading, asph. paving, retaining wall, Cayuga St. from "L" St. to Castor Ave.; b. conc. paving, c. conc. paving, grading asph. paving, retaining wall, sewers and watermains 48 St. from Market St. to Haverford Ave.; asph. repaving, asph. resurf., reconstr. deck (bascule span) Bridge No. 11, South St. over Schuylkill River; curbing, footway and traffic island work city-wide. CD 10/28/43.

† **Maryland and Virginia**—TACTICAL FACILITIES—BA On Or About 6/27—U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C., (a) modifications to existing sewage filter beds, (b) constr. hot-plant mix surf. course on existing unsurf. stabilized aggregate roads, (c) drainage and erosion control, (d) fine grading, fertilizing, and seeding, (e) miscellaneous items incl. (1) surf. existing hardstands and parking areas, (2) constr. stabilized aggregate shoulders, (3) concrete sidewalks, (4) exterior lighting Special AAA sites in the vicinity of W-36 Brandywine, W-35 Croom, W-44 Waldorf, W-45 Mattawoman, W-54 Pomonkey, W-92, Rockville, W-93 Laytonsville, W-94 Gaithersburg, Maryland, and W-74 Fairfax, W-83 Vienna, W-64-65 Lorton (dual site location) Virginia, ENG-49-080-57-94-(92). Plans deposit $25. CD 3/29/56.

† **Newfoundland, Stephenville**—HEATING, etc.—BA On Or About 7/23—U. S. Eng., 346 Broadway, New York 13, N. Y., central heating and power plant facility, Ernest Harmaon Air Force Base, ENG-30-347-57-33.

BUILDINGS—BA

† **D. C., Wash.**—POST CHAPEL—BA 6/19—U. S. Eng., First and Douglas Sts. N. W., Wash. Zone 25, post chapel, Walter Reed Army Medical Center, ENG-49-080-57-59-(58). CD 5/21.

† **N. Y., Amherst**—TRAINING CENTER—BA On Or About 6/20—U. S. Eng., 111 E. 16 St., New York, Zone 3, U. S. Army Reserve Training Center, ENG-30-075-57-430. $500,000-$600,000. CD 9/10.

† **N. Y., Fort Totten**—QUARTERS—BA On Or About 6/20—U. S. Eng., 111 E. 16 St., New York, Zone 3, bachelor officer's quarters, ENG-30-075-57-475. $250,000-$300,000. CD 12/6.

D. C., Wash.—SCHOOL—BA 6/24—D. C. Govt., Dir. Bldgs. & Grounds, 499 Pa. Ave. N. W., Anacostia High School addn., 16 and R Sts. S. E. Plans deposit $25. Ronald Senseman, 7705 Georgia Ave. N. W., archt. CD 9/28, under LB.

Pa., Bristol—SCHOOL—BA 7/9—Bucks County Technical School Auth., Fallsington, vocational school, Bristol Twp. $600,000. Micklewright & Mountford, Morrisville, archts. Pennell & Wiltberger, 1201 Chestnut St., Phila., engrs. CD 5/9.

HEAVY CONSTRUCTION—LB & CA

Columbia Asphalt Corp., 35-32 Lawrence St., Flushing, N. Y., LB **$248,269** (4 bidders) No. 1, b. conc. repaving upon new c. conc. base Rockaway Blvd. from 95 to 106 Sts., NEW YORK, President Queens Boro, Borough Hall, 120-55 Queens Blvd., Kew Gardens, 24, N. Y. Bids May 20. CD 5/16;
Mac Asphalt Constr. Corp., 33-15 Lawrence St., Flushing, N. Y., LB **$229,143** (4 bidders) No. 12. removing trolley tracks and b. conc. repaving Broadway from Baxter Ave. to Queens Blvd., Queens Boro, (New York);
Triboro Asphalt Corp., 120 St. and 31 Ave., Flushing, N. Y., LB **$232,300** (4 bidders) No. 4. b. conc. repaving Beach Channel Dr. from Beach 36 St. to Beach 51 St. Queens Boro (New York) .

Legnano Electric Corp., 37 Wall St., New York, N. Y. LB **$112,680** (5 bidders) furnishing, del. 26 MVA three-winding transformer, Barnhart Plattsburgh Transmission Proj., Spec. PA-6-27 Contr. TP6, NEW YORK. The Power Auth. of State Of New York, 270 Broadway, New York, N. Y. Bids Apr. 25. CD 4/1.

▲ **M. Melnic & Co., Inc. and Bartley & Sons, Inc.,** 225 Willow Ave., New York 54, N. Y. CA **$1,321,984** general superstructure for Third Ave. Sub-station, P-176, BROOKLYN, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Apr. 5. CD 4/25, under LB.

Fischback & Moore, Inc., 226 E. 41 St., New York 17, N. Y. CA **$667,993,** furnishing, installing electrical facilities for coal handling equip. for 59 St. Power Plant, Manhattan Boro, Contr. P-116, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St, Brooklyn 1, N. Y. Bids Apr. 26. CD 4/30, under LB.

Edenwald Contr. Co., 151-45 6 Rd., Whitestone, N. Y., LB **$76,702** (3 bidders) Contr. 570, with 2 [illegible] asph. on concrete repaving roadways of Henry St. from Oliver to Pike Sts. and from Rutgers to Montgomery Sts., NEW YORK, N. Y. President, Manhattan Boro, Municipal Bldg., New York 7, N. Y. Bids May 24. CD 5/17.

(Continued on Page 136)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**
PROPOSED WORK	
Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

78 cents per million gallons... pumped by Westinghouse

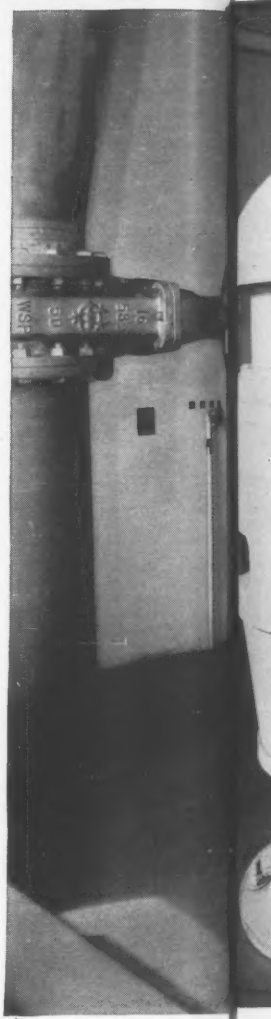
Basic operating cost of pumping stations in the Tacoma, Washington, sewage plant is of more than usual importance in the over-all plant cost because of an unusually high gallons-per-capita-day flow through the system. Engineers found it necessary to plan for nearly three times normal.

In the main pumping plant at Tacoma, four Westinghouse vertical pump motors handle the load. They are cut in and out as required and the sequence of rotation changed automatically. The station is unmanned except for periodic checks and maintenance by operators from the treatment plant.

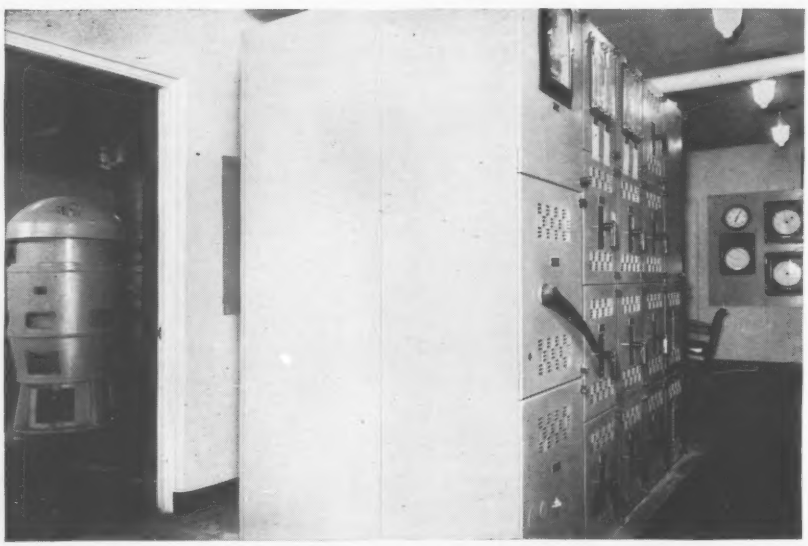
Although the pumping requirement is high in proportion to the population served (about 67,000) the actual pumping cost is not. Yearly costs in the Tacoma plant average about 78 cents per million gallons of sewage pumped. Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pa. J-94075

YOU CAN BE SURE...IF IT'S

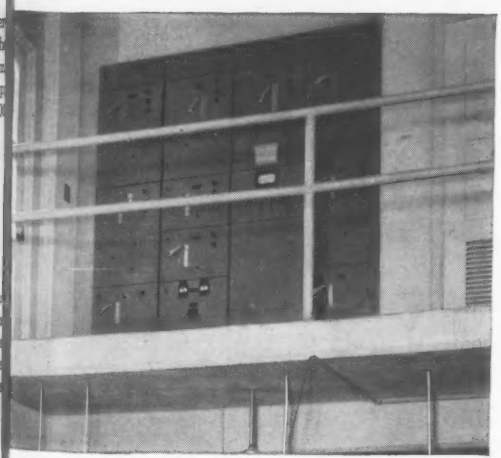
Westinghouse



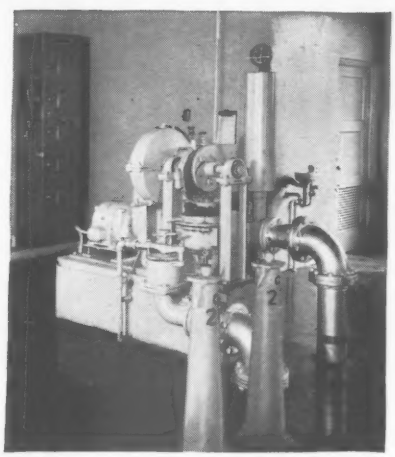
The four Westinghouse ver tical pump motors in th Tacoma plant—4000 gpm 50 hp; 8000 gpm, 100 hp 10,000 gpm, 100 hp; 12,00 gpm, 125 hp.



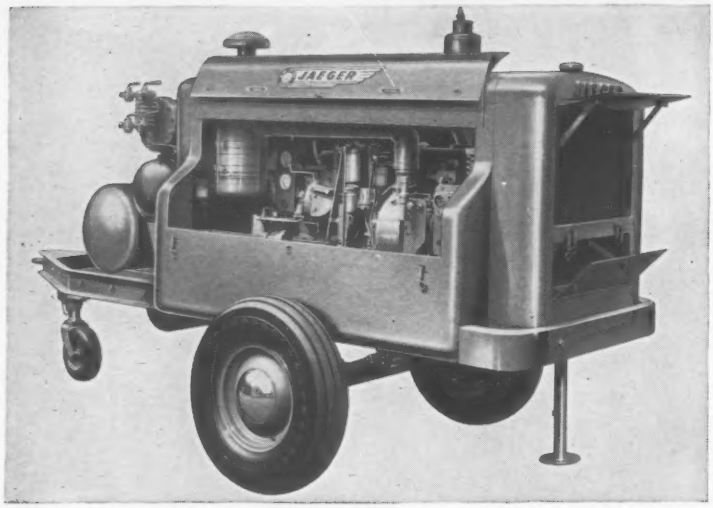
Distribution of power t motor and lighting circuit for the entire plant i through this Westinghous switchgear, located in th main pump building.



Control center for many of the sewage plant motors, located on a balcony to conserve space, is typical of the Westinghouse unitized equipment which simplifies sewage plant electrical construction.



This Westinghouse motor drives one of the many pumps in the treatment plant. Note convenient location of control unit for this and other adjacent motors.



Jaeger "250" rotary ... *biggest compressor on 2 wheels*

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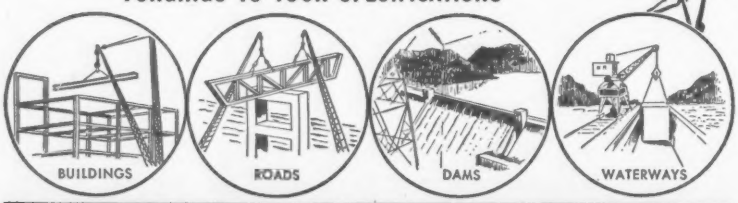

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The SKOOKUM-CO., Inc.

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U.S.A. CANADA

(Continued from page 133)

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, bids opened 5/21,

Thomas Nicol Co., Inc., Farmingdale, N. J., LB $2,326,158 (13 bidders), grading, bridges, incidental paving 3.111 mi. Route 42, Sections 14E and 15E (North-South Freeway) from Coles Rd. to Turnerville in Gloucester and Washington Twps., Camden and Glouster Counties. CD 5/6.

Barrett Paving Co., 1293 Princeton Rd., Trenton, N. J., LB $92,800, road surfacing, Item 2A, BURLINGTON, N. J. Bd. Freeholders, Burlington Co. Mt. Holly, N. J., F. L. Branin, Mt. Holly, N. J., co. engr.

Canning & Cestone, 127 Franklin Terrace, Maplewood, N. J., LB $576,865, Contract A, collecting plant system, SHIP BOTTOM, N. J., Ship Bottom Sewerage Auth., Ship Bottom, N. J. Bids May 14. CD 5/6.

Carl E. Widell & Son, Merchantville, N. J., LB $280,877, Contract C, sewage treatment works, (Ship Bottom, N. J.);

Robert Seybold, 326 Newton Ave., Collingswood, N. J., LB $90,211, Contract B, pumping station (Ship Bottom, N. J.).

Lehigh Foundations, Dresher, Pa., LB $483,808, sewers, Contract 1, VINELAND, N. J. Landis Sewerage Auth., Vineland, N. J. CD 11/14.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg, Bids opened 5/24.

Pa.—Brayman Constr. Co., 2 Canterbury Rd., Pittsburgh 2, Pa., LB $2,227,595, Sch. 1 (5 bidders) substructure and grading and drainage of approaches South Bridge over Susquehanna River between Harrisburg, Dauphin Co. and Lemoyne, Cumberland Co.;

Pa.—Harris Structural Steel Co., Inc., 419 Fourth Ave., New York 16, N. Y., LB $4,122,666. (4 bidders) Sch. 2, superstructure and paving of approaches and service roads for South Bridge over Susquehanna River between Harrisburg, Dauphin Co. and Lemoyne, Cumberland Co. CD 4/24.

Maring Masse, 4418 N. American St., Phila., Pa., LB $95,796, Bids 2799-2803, Sewers, PHILA., Pa. Dpt. Procurement, City Hall Annex, Phila., Pa. Samuel S. Baxter Phila., Pa., water comr., CD 2/4/44;

M. P. Ventresca, 8221 Rodney St., Phila., Pa., LB $80,143, Bids 2800-2806, Sewers (Phila., Pa.).

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

W. M. Koppelman, White Marsh, Md., CA $266,084, grading, drainage, surf. 0.76 mi. Ardwich-Ardmore Rd., and constr. 4 span steel beam bridge over Washington Circumferential Hy., Contr. P 722-44-320, Prince George's Co. Norman Pritchett, c/o owner, chf. engr. A. L. Grubb, c/o owner, chf. Bureau Bridges. CD 4/3, under LB.

A. & M. Constr. Co., 4322 Walther Blvd., Baltimore 14, Md., LB $81,529, (14 bidders), Contr. 563, D.S.&W. Group Bids, TOWSON, MD., Baltimore Co., Executive County Office Bldg., Towson, Md. John B. Funk, c/o owner, ch. engr. Bids May 16, CD 5/8.

BUILDINGS—LB & CA

▲† **Bonwit Constr. Co.**, 370 Lexington Ave., New York, N. Y. CA $1,089,421 FIELD MAINTENANCE SHOP, BELLMORE, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Jan. 22. CD 1/24, under LB.

Gunderson Constr. Corp., 283 Hendrickson Ave., Lynbrook, N. Y., CA Est. $800,000. CHURCH, OFFICES and COMMUNITY HALL on Cathedral Ave., between Cathedral Court and Chelsea Place, HEMPSTEAD, N. Y. St. Paul's Greek Orthodox Church, 115 Greenwich St., Hempstead, N. Y. Raymond H. Julian, Woodbury Rd., Syosset, N. Y., archt.

▲ **George A. Fuller Co.**, 597 Madison Ave., New York, N. Y., CA $4,000,000. 3 story DEPARTMENT STORE, north side of Queens Blvd., near 63 Rd., REGO PARK, N. Y. Alexander's Department Store, Grand Concourse and Fordham Rd., New York, N. Y. CD 8/7.

▲ **Farming Ridge Homes**, c/o Rudolph Novak, archt., 713 Main Ave., Clifton, N. J. Owner Builds, $2,000,000, 83 HOUSES, Grove and Broad Sts., CLIFTON, N. J.

Theodore T. Clatts Constr. Co., Mt. Holly, N. J., CA $100,000. WAREHOUSE and SHOWROOM, COLUMBUS, N. J., Columbus Branch, Burlington County Farmers Co-op. Assoc., Inc., Columbus, N. J.

Hilltop Estates Homes, c/o The Boyle Co., 4 Julian Place, Elizabeth, N. J. Owner Builds, $360,000, 15 HOUSES, Maple Ave. and Chestnut and Elm Sts., NEW PROVIDENCE, N. J.

Daniel Rosetty & Son, 26 Elizabeth Ave., Trenton, N. J., CA $93,000, TRUCKING DEPOT, TRENTON, N. J. Continental Baking Co., 630 Fifth Ave., New York, N. Y.

Squire Lane Homes, c/o Rudolph Novak, archt., 713 Main Ave., Clifton, N. J., Owner Builds, $700,000, 22 HOUSES, Tuers Place, near Squire Hill Rd., UPPER MONTCLAIR, N. J.

Kent Constr. Co., 10 E. Fayette St., Baltimore 2, Md., Separate Contracts, $363,400, 50 brick, masonry, single family HOMES, BALTIMORE, MD.

Southern Commercial Constr., Inc., 1341 Pennsylvania Ave. S.E., Wash., D. C., CA $557,957. Northwestern HIGH SCHOOL addn., Colesville Rd., HYATTSVILLE, MD. Prince George's Co. Bd. Educ., Marlboro, Md. Bids May 14, awarded May 21. CD 5/21, under LB.

Cromwell Valley, Inc., 701 St. Paul St., Baltimore 2, Md., Separate Contracts, $464,000, 29 frame, brick DWELLINGS, Streambank Court and Beaver Circle, Cromwell Valley, near TOWSON, MD.

▲ **John Tester & Son**, 7520 Marlboro Pike, Forest Rd., Clinton, Md., CA $1,558,756, County COURT HOUSE Addn., UPPER MARLBORO, MD. Prince George's Co., Court House, Upper Marlboro, Md. Walton & Maddox, 3510 Rhode Island Ave., Mt. Rainer, Md., archts. Bids May 17, CD 5/23, under LB.

(Continued on page 140)

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"We were able to erect the steel for the Green Manufacturing Company plant and office 50% faster with V-LOK than ordinary steel and steel joists. We saved up to one-third on our erection costs, per square foot and the materials cost less also. Incidentally, the men liked the work better and we believe V-LOK produces a more rigid structure than ordinary erection materials."

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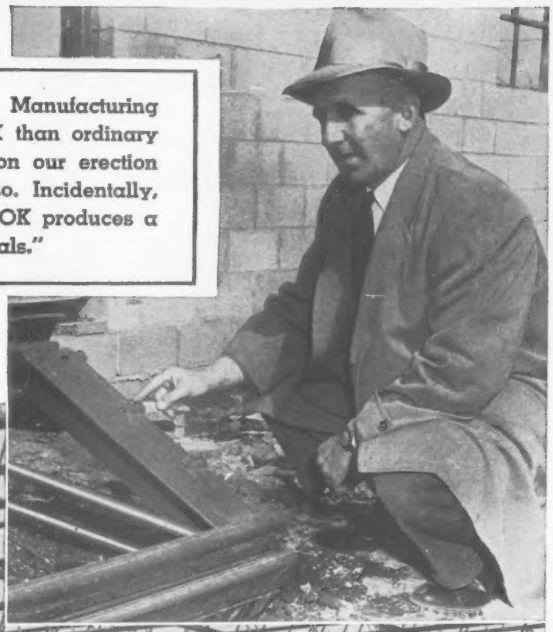
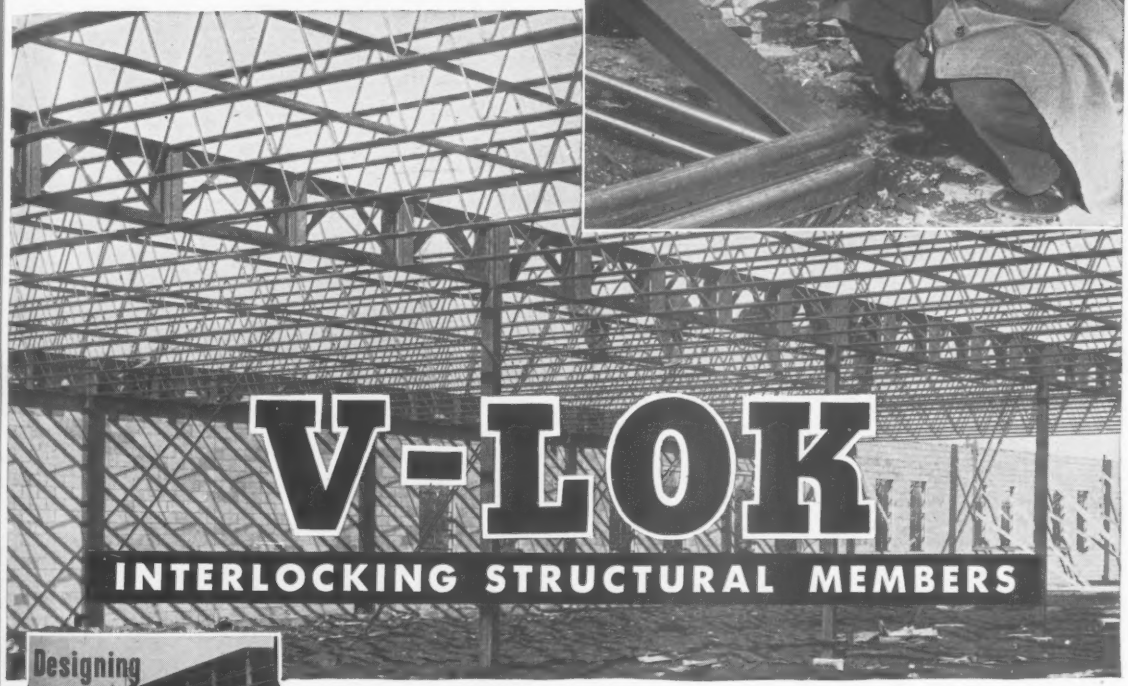
Erie, Pennsylvania
Roland A. Ketzel, General Contractor, Erie, Pa.





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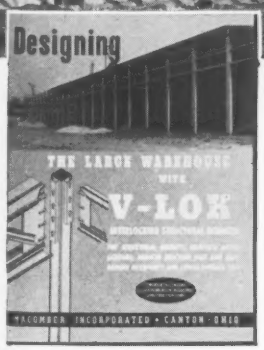

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Sure control! The retarder acts as built-in brake; saves service brakes!

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No-shift driving in tr
the right gear always!

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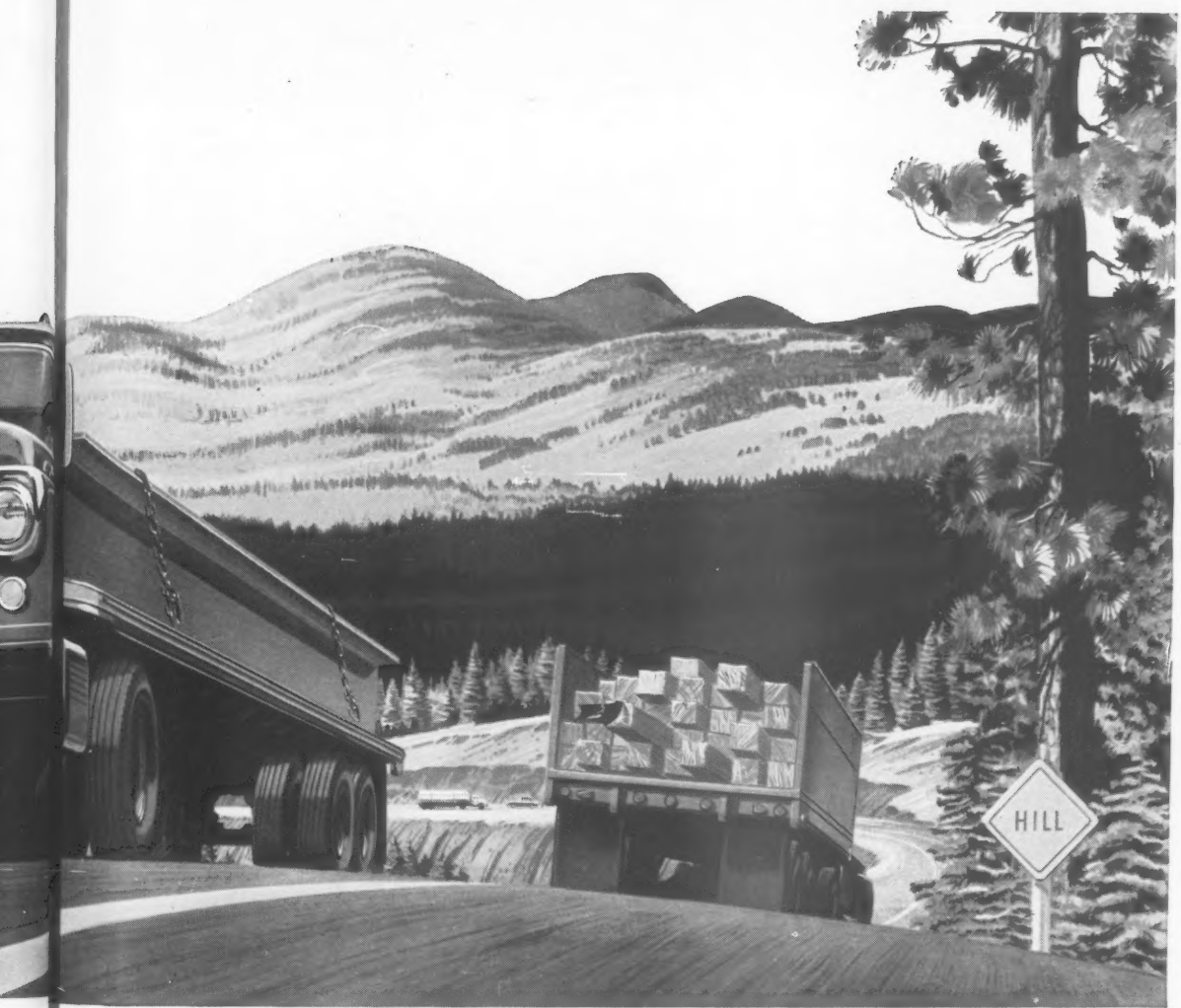


Time-saving, money-saving Transmatic Drive is available at extra cost on Ford trucks from 15,000-lb. GVW through 60,000-lb. GCW.

FORD TRUCKS COST LESS

...LESS TO OWN ...LESS TO RUN ...LAST LONGER, TOO!

(Continued from page 139)

SOUTH

HEAVY CONSTRUCTION—BA

† **VIRGINIA**—BA 6/11—Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington, Paving 33, Pentagon Rd. network, resurf. adjustment of curbs and inlets and other work from near U. S. 1 to near Memorial Ave.

† **Va., Manassas**—EMERGENCY ELECTRICAL POWER, etc.—BA 6/11—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., emergency electrical power and distr. at Quantico Air Force Station, ENG-49-080-57-67 (66).

† **Va., Richmond**—BA 6/11—Dist. P. Wks. Office, Fifth Naval Dist., Building N-26, U.S. Naval Base, Norfolk, roadway repairs, Naval Diesel School, NBy 7745, Spec. 7745/57 Rev. CD 4/10. Bids 4/23, rejected.

† **Kentucky**—BA 6/12—U. S. Eng., 237 4th Ave., Huntington 18, W. Va., first stage cofferdam for dam, Greenup Locks and Dam, Ohio River at Greenup, CIVENG-46-022-57-83. CD 5/21.

† **Va., Norfolk**—BA 6/13—Dist. P. Wks. Office, Fifth Naval Dist., Bldg. N-26, U.S. Naval Base, Norfolk pumping station and reservoir, Naval Base, NBy 7736 Spec. 7736/57. CD 8/24.

† **Bahamas**—BASE FACILITIES—BA 6/14—Resident Officer in Charge of Constr., Bureau Yards & Docks Contracts, P.O. Box 956 (245 Alcaza Ave.) Coral Gables 34, Fla., addnl. base facilities for air force missile test center offshore facilities at San Salvador Island, NBy 10333, Spec. 10333/57.

† **N. C., Cherry Point**—TEST CELL—BA 6/18—Dist. P. Wks. Office, Fifth Naval Dist., U.S. Naval Base, Norfolk, Va., gas turbine test cell., Bldg., 137, Marine Corps Air Station, NBy 3595, Spec. 3595/56.

† **Mississippi**—UNMANNED GAP FILLER FACILITY—BA on or About 6/20—U.S. Eng., 2301 Grant St., Mobile, Ala., unmanned gap filler facility at Summit, Pike Co., ENG-01-076-57-99.

† **S. C., Columbia**—RUNWAY, etc— BA About 6/24—U. S. Eng., Customhouse, Charleston, runway and taxiway extension, Congaree Air Force Base.

† **Ga., Albany**—ENCLOSURE—BA 6/25—Dist. P. Wks. Office, Bldg. No. 13, U. S. Naval Base, Charleston, S. C., enclosure for welding shop materials, shop 630 Building 2200, U. S. Marine Corps Supply Center, NBy 13805, Spec. 13805/57. CD 8/27, under Public Buildings.

† **Ga., Albany**—TRAILER COURT—BA 6/25—Dist. P. Wks. Office, Bldg. No. 13, U. S. Naval Base, Charleston, S. C., trailer court, U. S. Marine Corps Supply Center, NBy 13203, Spec. 13203/57. CD 8/27, under Public Buildings.

W. Va., Green Bank—RADIO TELESCOPE—Bids Asked —Associated Universities, Inc., 10 Columbus Circle, New York 19, N. Y., 140 ft. radio telescope at Radio Astronomy Observatory.

BUILDINGS—BA

Ga., Lawrenceville—SCHOOL—BA 6/11—Gwinnett County Bd. Educ., County Court House, North Gwinnett High School, Level Creek. Plans deposit $50. Gregson & Assocs., 618-24 Mortgage Guarantee Bldg., Atlanta, archts.

† **Ga., Fort Gordon**—QUARTERS—BA About 6/15—U. S. Eng., 200 E. St. Julian St., Savannah, MCA family quarters, Serial No. ENG-09-133-57-44.

† **Ala., Fort Rucker**—ADMINISTRATION—BA On Or About 6/20—2 story, 8,000 sq. ft. administration bldg. CONARC Bd. No. 6, at Ozark Army Airfield, ENG-01-076-57-101. CD 8/30.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Commonwealth of Va., Dpt. Hys., Central Office Bldg., 1221 E. Broad St., Richmond,

Va.—**Norfolk Contg. Co.**, P. O. Box 4225, Norfolk 6, Va., CA $1,957,938, Contract D-4, Norfolk approach hy. highway and structures;

Va.—**George M. Brewster & Sons Inc.**, 275 Fort Lee Rd., Bogota, N. J., CA $1,723,515, Contract N-1, Newport News Connector Hy. and structures. Bids May 1. CD 5/7, under LB.

† **J. R. Houska Co., Inc.**, 1100 Billings St., Norfolk, Va., LB $372,966 (3 bidders) roads, parking, sidewalks and railroad extens., Naval Air Station, NBy 7762, Spec. 7762/57, OCEANA, VA. Dist. P. Wks. Office, Fifth Naval Dist., Bldg. N-26, U. S. Naval Base, Norfolk, Va. Bids May 21. CD 4/23.

† **Luke Constr. Co. Inc.**, 836 W. 39 St., Norfolk, Va., LB $85,608 (10 bidders) security bldg. addn. Naval Air Station, NBy 10654, OCEANA, VA. P. Wks. Office, Fifth Naval Dist. U. S. Naval Base, Norfolk, Va. Bids May 21. CD 4/30.

WEST VIRGINIA—State Rd. Comn., 1800 Washington St. E., Charleston, Bids opened 5/21.

W. Va.—**W. R. Orders & Son**, St. Albans, W. Va., LB $296,990. Contr. 2, Annamoriah Bridge 1155, Proj. S-209 (3), Calhoun Co.;

W. Va.—**Pocahontas Constr. Co.**, Marlinton, W. Va., LB $97,040. Upper Little Ten Mile Bridge No. 203, Contr. 3, Proj. S-243 (4), Harrison Co.;

W. Va.—**K. D. Sarrett & John S. Gillespie, Inc.**, Huntington, W. Va., LB $139,121, Belo Bridge approaches 0.679 mi., Proj. S-85 (2), Contract 2, Mingo Co. Bids May 21. CD 5/14.

▲ **WEST VIRGINIA**—State Road Comn., Charleston, Zone 5, Bids opened 5/21.

W. Va.—**Harlow Constr. Co.**, Ripley, W. Va., LB $85,461 b. conc. 6.60 mi. Proj. 3166 and 3322, Calhoun Co.; LB $102,862, b. conc. 8.4 mi. Proj. 75, 1032 and 3076-d, Calhoun Co.; LB $85,673, surf. tr. 9.1 mi. Proj. 70 and 3015, Grant Co.;

W. Va.—**Andersons, Inc.**, Box 3004, Charleston, W. Va., LB $99,642, b. conc. 7.2 mi. Proj 3134 A and B, Kanwaha Co.; LB $139,873 b. conc. 12.8 mi. Proj. 162-A and F-12 Lewis Co.;

W. Va.—**Roads Materials, Inc.**, Bluefield, W. Va. and **Andersons' Inc.**, Box 3004, Charleston, W. Va., LB $75,018, b. conc. 7.3 mi. Proj. 3434, and 3481, Logan Co.; LB $121,955 b. conc. 10.41 mi. Proj. 3131A B and C, Wyoming Co.;

W. Va.—**J. F. Allen Co.**, Clarksburg, W. Va., LB $156,619, traffic bound base, b. conc. bottom and wearing courses 1.588 mi. Proj. S-243 (4) Harrison Co.; LB $168,941 traffic bound base course b. conc. surf. and guardrail 0.577 mi. S. G. 243 (5) Wetzel Co.;

W. Va.—**Highway Constr. Co.**, Clarksburg, W. Va., LB $103,346, b. conc. 8.8 mi. Proj. 3497, Pocahontas Co.;

W. Va.—**Road Materials, Inc.**, Bluefield, W. Va., LB $105,658, b. conc. 9 mi. Proj. 3286 B and C, McDowell Co. CD 5/10.

† **Officer in Charge of Constr.**, Bldg. 902, Naval Air Station, Jacksonville, Fla., received no bids Apr. 15, building alterations to Building 167, Naval Air Station, NBY 19184, JACKSONVILLE, FLA. New bids May 23. CD 3/27.

† **Earl L. Millen**, Bossier City, La., CA $178,611 clearing, snagging and excav. for channel imprv. David and Burrell Bayous, Pecan Bayou and Squirrel Lake Area, Quitman and Panola Counties, MISSISSIPPI. U. S. Eng., P. O. Box 60, Vicksburg, Miss. Bids Apr. 16, awarded Apr. 26. CD 3/19.

† **J. C. McBeth**, 1000 Miss. St., Jackson, Miss., CA $44,913, clearing, snagging for Skuna River Channel imprvs., Item S.R. Calhoun Co., MISSISSIPPI. U. S. Eng., P. O. Box 60, Vicksburg, Miss. Bids Apr. 18, awarded Apr. 26. CD 3/22.

▲ **LOUISIANA**—State Hy. Dpt., State Hy. Office, Baton Rouge, Bids opened May 22,

La.—**T. L. James & Co.**, Rustin, La., LB $1,032,430 (2 bidders) soil cement or aggreg. type base course, bit. mix for hot application, c. conc. pavement, etc. 11.175 mi. Lake Arthur-Gueydan Hy. Rte. 14, S.P. Nos. 55-01-03, 55-02-03, 55-03-05, FASP No. S-102 (3), Vermillion and Cameron Parishes; LB $1,393,853 (2 bidders), grading, concrete overpass structures and connecting ramps, c. conc. pavement, aggreg. base course and bit. mix for hot application, etc. 0.427 mi. Victory Drive Interchange Rte. 3019, S.P. No. 283-08-17 Contr. No. 3, Orleans Parish; LB $328,100 (2 bidders) c. conc. wid'n. bit. hot mix surf., etc. 2.2279 mi. General Meyer Blvd. (Algiers) Rte. 428. S.P. No. 409-01-03, Orleans Parish;

La.—**James F. Cross**, Baton Rouge, La., LB $414,857, (2 bidders) grading, drainage structures, etc. 7.181 mi. Tiger and Pecan Islands S.R. La. 82. S.P. No. 194-03-01 FASP No. S-501, Vermillion Parish;

La.—**E. A. Caldwell**, Reymond Bldg., Baton Rouge, La. LB $337,453 (2 bidders) aggreg. type or soil cement base course, bit. surf. treatment, etc. 10.048 mi. Indian Village-Kinder Hys. Rte. 1149, S.P. No. 197-04-04, Allen Parish;

La.—**Lambert Gravel Co.**, St. Francisville, La., LB $76,605 (2 bidders) shaping roadway, small drainage structures, sand clay grav. base course bit. surf. treatment, etc. 6.1 mi. Weyanoke-Plettenberg Loop Rd. S.P. No. 713-03-19, West Feleciana Parish;

La.—**Hall & Holland**, Montgomery, La., LB $301,087 (2 bidders) aggreg. type or soil cement base course, bit. surf. treat. 8.906 mi. Wisner-Fort Necessity Hy. S.R. 562, S.P. Nos. 165-01-05 & 165-02-09, Franklin Parish;

La.—**Texas Bitulithic Co.**, Baton Rouge, La., LB $125,744 (2 bidders) bit. hot mix overlay, etc. 7.2 mi. Burnside-Gonzales Hy. Rte. 44, S.P. No. 265-01-09, Ascension Parish;

La.—**Cook Constr. Co.**, Hy. 80 W, Jackson, Miss., LB $1,788,119 (2 bidders) embankment constr. etc., 3.362 mi. West Atchafalaya Floodway crossing Hy. S.R. 190. S.P. Nos. 12-13-29 & 8-04-14, FA No. F-169 (12), St. Landry Parish;

La.—**Moreauville Concrete Works**, Moreauville, La., LB $168,697 (2 bidders) grading, small drainage structure 0.07 mi. incl. concrete slab span approaches rein. concrete box culverts with concrete approaches, S.P. Nos. 8-09-15, 8-30-07, 9-01-26-52-09-03, Rapids Parish;

La.—**R. B. Tyler Co.**, 2500 Poydras St., New Orleans, La., LB $732,830 (2 bidders) c. conc. pavement, wid'n. existing conc. pavement, bit. hot mix surf. 7.318 mi. Gretna-Belle Chasse Hy. Rte. 23. S.P. Nos. 62-01-07 & 62-02-27, Jefferson and Plaquemine Parishes;

La.—**L. H. Bossier, Inc.**, 212 Maryland Ave., Alexandria, La., LB $192,488 (2 bidders) shaping roadway drainage structures, aggreg. type or soil cement base course, bit. surf. treat. etc. 10.645 mi. Merryville-Evans Hy. Rte. 111. S.P. Nos. 132-01-03 & 132-02-14, Beauregard and Vernon Parishes. CD 5/20.

▲† **Atlas Constr. Co.**, Vidalia, La., CA $593,400 furnishing 60,000 squares articulate concrete mattress at Vidalia, Louisiana Casting Field, Vidalia, bank protection work in Lower Mississippi River Valley, LOUISIANA. U. S. Eng., P. O. Box 60, Vicksburg, Miss., Bids Apr. 17, awarded Apr. 30. CD 3/27. **Fordice Constr. Co.**, Porter Bldg., Memphis, Tenn., CA $946,320; furnishing 100,000 squares of articulated concrete mattress at Delta, Louisiana Casting Field, Delta (LOUISIANA).

▲ **Clement Betpouey Jr. & Co.**, National Bank Bldg., New Orleans, La., LB $445,803, Contr. 1, Proposal 1, wrapped steel pipe; LB $277,934, Contr. 1, Proposal 2, c.i. pipe, for natural gas distr. sys. in Wards 2, 8, 9, and 10, Terrebonne Parish, HOUMA, LA. Terrebonne Parish Police Jury, Houma, La. Bids May 15. CD 4/23.

Worth-James Constr. Co., Box 68, Little Rock, Ark. LB $257,342, Contr. 1, Proposal 3, kralastic plastic pipe; LB $256,775, Contr. 1, Proposal 4, P.V.C. plastic pipe for gas. distr. sys. (Houma, La.).

Breslin Constr. Co., 1430 S. Preston St., Louisville, Ky., LB Est. $75,000. 1.6 mi. surf. and crushed stone shoulders IFG 15-056-57-170, FORT CAMPBELL, KY. Contg. & Purch. Officer, Fort Campbell, Ky. Bids May 16. CD 4/25.

BUILDINGS—LB & CA

Thos. J. Boyhill Co., Inc., 1430 N. Uhle St., Arlington, Va., CA $450,000. ARVA MOTEL addn. and swimming pool, Pershing Dr. and Lee Blvd., ARLINGTON, VA. Hotel Corp. of America, Mayflower Hotel, Wash. D. C. John M. Walton & Assoc., 2049 N. 15 St., Arlington archts.

▲ **T. A. Loving**, P. O. Box 1291, Goldsboro, N. C., CA $4,598,800. 447-family unit low-rent HOUSING, Whitecombe Court, WV-7-6, RICHMOND, VA. Richmond Redevelopment & Housing Auth., 100 E. Main St., Richmond, Va. CD 9/27.

J. W. Bateson Co. Inc., P. O. Box 13307, Walnut Hill station, Dallas, Tex., CA $4,799,900. 447-family unit low rent housing VA-7-7 Fairfield Court (Richmond, Va.).

Eastern Constr. Co., 399 W. Broad St., Falls Church, Va., CA Est. $400,000, CLUBHOUSE and swimming pool, etc. VIENNA, VA. West Brier Country Club, Vienna, Va. Awarded May 20. CD 3/15.

Eubank & Steele, Box 1775, Lexington, Ky., LB $838,000. Northside HIGH SCHOOL, LEXINGTON, KY. Fayette Co. Bd. Educ., Lexington, Ky. Frankel & Curtis, 130 Barr St., Lexington, Ky., archts.

Ed L. Powers Contg. Co., Jesup, Ga., LB $623,000. HOSPITAL, MONROE, GA. Walton County Hospital Auth., Court House, Monroe, Ga. Bids Apr. 30. CD 4/16.

James J. Culotta, Contractor, 912 Martin Behrman Walk, Melaine, La., LB $625,000 (3 bidders) general contract 65,000 sq. ft. 100-unit MOTOR HOTEL, Air Line River, Thrush and Zinnis Sts., in Jefferson Parish, GRETNA, LA. Owner, c/o Patrick M. Allison & Assocs., 315 St. Charles St., New Orleans, La. Bids May 7. CD 4/26.

Pineville Community Hospital, Pineville, Ky., rejected bids to have opened Apr. 30, HOSPITAL addn., PINEVILLE, KY. LB est. $370,815. Will re-advertise. CD 5/8, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **Ill., Chicago**—AIRPORT—BA 6/11—City, City Hall, O'Hare International Airport development, exten. runway and relat. taxiway; constr. 2nd unit of maintenance bldg. Park Ridge $1,250,000. CD 11/8/45.

† **Wis., Madison**—ROAD REPAIRS—BA 6/14—Procurement Office, Bldg. 600, Truax Field, Madison, Zone 7, road repairs, 2.9 mi. roadway, Truax Field, IFB 47-602-57-75. CD 8/22.

† **Illinois and Minnesota**—RANGE FACILITIES—BA 6/17—Civil Aeronautics Admin., Federal Office Bldg., Kansas City, Mo., VOR radio range facilities, 3-57-114 at Bible Grove, Ill. and Nodine, Minn.

† **Ind., Jeffersonville**—LOADING DOCK—BA About 6/26 —U. S. Eng., P. O. Box 59, Louisville 1, Ky. loading dock, Jefferson Proving Ground, ENG-15-029-57-79. CD 9/20.

BUILDINGS—BA

O., Hamilton—HOUSING—BA 6/13—Hamilton Metropolitan Housing, 1005 South Front St., Proj. 15-2, 26 two story dwelling units, incl. utilities and site imprvs. Plans deposit $50. Friedman, Alschuler & Sincere, 223 W. Jackson Blvd., Chicago 6, Ill., archts. CD 1/6/50.

HEAVY CONSTRUCTION—LB & CA

Price Brothers Co., 1932 E. Monument St., Dayton, O., CA $317,247, concrete pipe and fittings for sewers, CINCINNATI, O. City, City Hall, Cincinnati, O. CD 11/5/54.

O'Neil Constr. Co., 5500 Dunham Rd., Maple Heights, O., CA $86,500. surf. tr. city streets, MAPLE HEIGHTS, O. City, City Hall, Maple Heights, O. Awarded May 1.

▲ **McDowell & Co. Inc.**, 3203 W. 71 St. Cleveland 2, O., CA Est. $7,000,000. Coal Pier, TOLEDO, O. Chesapeake & Ohio R.R., Rudolph Tench, materials handling engr., 823 E. Main St., Richmond 10, Va. Krupp Co. of Germany will supply fabricated steel.

▲ **INDIANA**—State Hy. Dpt., 102 N. Senate Ave., Indianapolis. Bids opened 5/15,

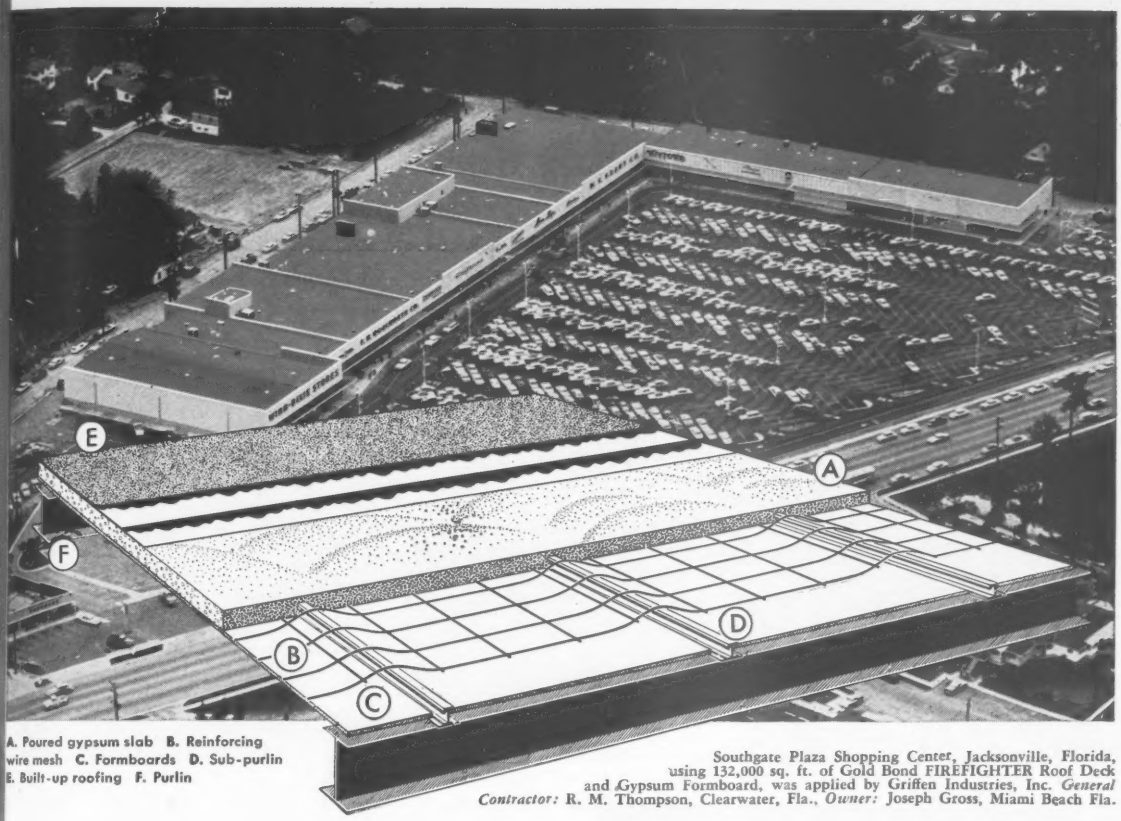
Ind.—Olinger Constr. Co., Huntingburg, Ind., LB $246,545, est. $252,794 Contr. 4130, three 50 ft. pan rein.-con. arch bridge over Lick Creek in Paoil and 0.609 mi. approaches Orange Co.;

Ind.—Reith-Riley Constr. Co., Goshen, Ind., LB $254,024. Contr. 4131, two cont. steel beam sub-structure exten. over Tippecanoe River, one substructure exten. over Walnut Creek, F-66 (21) and F-66 (22), Kosciusko Co.;

Ind.—**J. L. Wilson**, Bloomfield, Ind., LB $95,115, est. $97,117, Contr. 4132 one 36 ft., rein.-con. girder bridge over Goose Creek 0.262 mi. approaches F-95 (4), Benton Co.;

Ind.—**Russell L. Hornback**, Monticello, Ind., LB $109,597, est. $128,716, Contr. 4133, one rein.-con. girder sub-structure exten. over Clifty Creek, 0.008 mi. approaches; F-164 (2); one 25 ft., rein.-con. arch under-

(Continued on Page 143)



A. Poured gypsum slab B. Reinforcing wire mesh C. Formboards D. Sub-purlin E. Built-up roofing F. Purlin

Southgate Plaza Shopping Center, Jacksonville, Florida, using 132,000 sq. ft. of Gold Bond FIREFIGHTER Roof Deck and Gypsum Formboard, was applied by Griffen Industries, Inc. *General Contractor:* R. M. Thompson, Clearwater, Fla., *Owner:* Joseph Gross, Miami Beach Fla.

The fastest way to a finished roof...

POURED-IN-PLACE GYPSUM DECK

Gold Bond FIREFIGHTER Roof Deck is poured gypsum... *goes up faster than any other type of deck.* Up to 20,000 square feet of FIREFIGHTER can be poured in a single day—twice as fast as steel... ten times faster than reinforced concrete, precast slabs or tile.

This roof construction means lower cost... *two ways.* Labor costs are cut because construction is faster... and materials costs are cut because FIREFIGHTER's low dead load permits use of lighter structural supports.

Here are other FIREFIGHTER features:

INCOMBUSTIBLE—Gypsum is the *natural* firefighter because it's the rock with a "locked-in" water supply. Gold Bond FIREFIGHTER Roof Deck, poured over Gold Bond Gypsum Formboard, is usually rated as incombustible *because gypsum won't burn.*

LOW MAINTENANCE COSTS—Gypsum is chemically inert—won't rot, burn or decay. Alterations are easy because gypsum can be cut, nailed or patched economically.

FAST SETTING ACTION—Under normal conditions, Gold Bond FIREFIGHTER® Roof Deck enables roofers to follow with built-up roofing 30 minutes after pouring.

Features like these sold more than 100,000,000 square feet of Poured Gypsum Roof Decks last year on pitched, barreled and flat roofs. For more information, call your Gold Bond® representative or write National Gypsum Company, Dept. EN-67, Buffalo 2, New York.

"FIREFIGHTER" GYPSUM ROOF DECK

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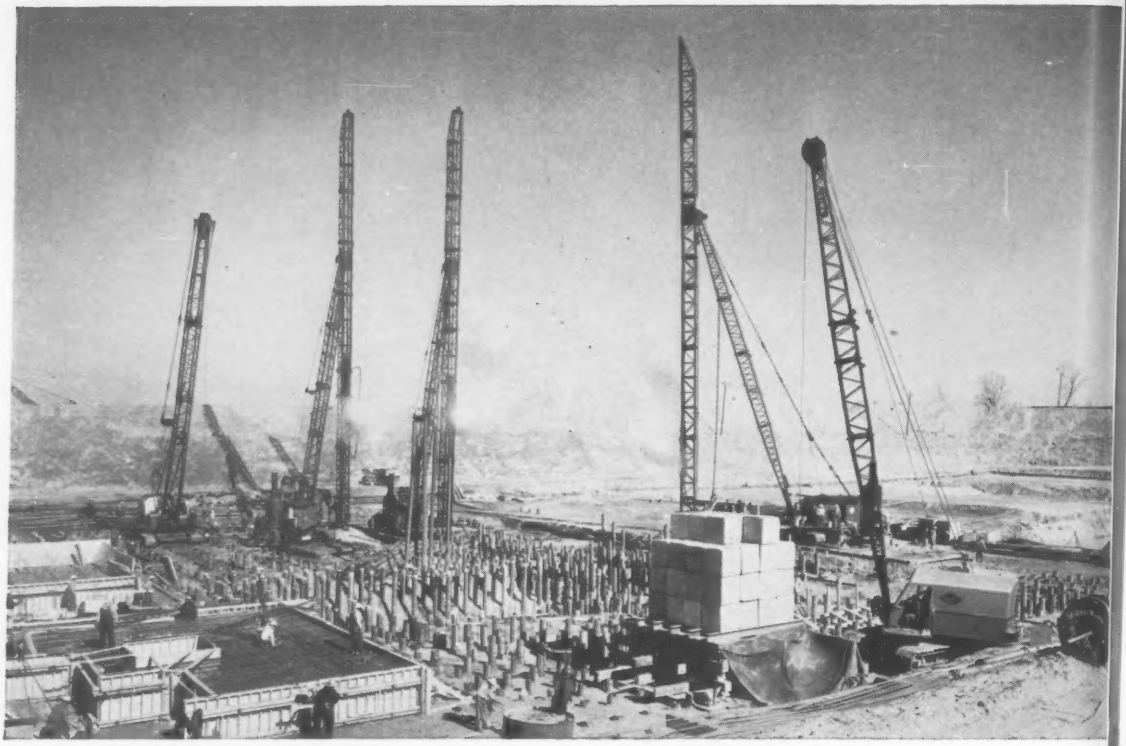
BUILDING PRODUCTS



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The Project:

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Engineers: Burns & Roe, Inc., New York City

Piling: 6,254 Cobi Cast-in-Place Concrete Piles. Estimated total lineal feet: 335,000.

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BOSTON, MASS. HOUSTON, TEXAS
SYRACUSE, NEW YORK NEW YORK, N. Y. KANSAS CITY, MO.

(Continued from page 140)

fill over Pressburg Creek in Madison, 0.511 mi. approach, F-164 (2), Jefferson Co.;

Ind.—**J. S. Sweet,** Cambridge City, Ind., LB $353,033, est. $420,906. Contr. 4136, three rein.-con. arch bridge over East Fork, White Water River on 10 St. in Richmond 0.236 mi. approaches U-402 (3) Wayne Co.

Ind.—**Morris Prosser,** Franklin, Ind., LB $98,193, est. $132,045 Contr. 4137, one 50 ft. rein.-con. arch underfill over Silver Creek F-616 (4), Union Co.;

Ind.—**John T. Force,** Shoals, Ind., LB $208,687, est. $212,957, Contr. 4138, 5 span, cont. steel beam and rein.-con. girder overhead, C. M. St. P. & P. R. R. and Spider Creek and 0.057 mi. approaches UGS-798 (2), Lawrence Co. CD 4/23.

▲ **INDIANA**—State Hy., Comn., State House Annex, Indianapolis. Bids opened May 14,

Ind.—**Brooks Constr. Co.,** 1123 Barthold, Fort Wayne, Ind., LB $252,801, est. $341,269 (9 bidders), bit. wid'n. and resurf. 7.72 mi. and bit. surf. 0.627 mi. SR 1 and SE 32 from 0.02 mi. north of north junction in Farmland to west edge of Wichester, Contr. No. RS-4048, Randolph Co.;

Ind.—**Vogel Constr. Co., Inc.,** St. Rd. 57 (Camby), Indianapolis, Ind., LB $167,389, est. $172,187, (3 bidders), bit. resurf. 3.659 mi. and bit. wid'n. and resurf. 2.097 mi. US 421 from Prospect St. in Indianapolis to Post Rd. in Bethel, Greenfield District, Contr. No. RS-4051, Marion Co.;

Ind.—**Stone City Constr. Co.,** Bedford, Ind., LB $426,450 (1 bidder), shoulder wid'n. drainage and bit. pavement 6.077 mi. Road No. 350 from US 421 in Osgood to Pierceville S-400 (1), Contr. No. RS-4103, Ripley Co.;

Ind.—**Moellering Constr.,** Engle Rd., Fort Wayne, Ind. LB $144,580, est. $149,322 (4 bidders), bit. paving with aggreg. base 4.38 mi. county road from SR 3 to SR 1, 3 mi. north of Wells-Allen County line, Proj. S-48 (3), Contr. No. 4139, Allen Co.;

Ind.—**Magaw Constr. Inc.,** Hawkins Rd., Richmond, Ind. LB $581,555, est. $627,637 (2 bidders), bit. pavement 5.576 mi. Road No. 38 from 0.18 mi. east of West Vork on Whitewater River at Hagerstown to west edge of Greensfork, S-81(2), Contr. No. R-4040, Wayne Co.;

Ind.—**John Dehner, Inc.,** 1206 Clark St., Fort Wayne, Ind., LB $132,861, est. $137,134 (2 bidders), aggreg. base wid'n and bit. surf. 5.387 mi. on County road from SR 3 at Huntertown to SR 427, S-363 (1), Contr. No. R-4141, Allen Co.;

Ind.—**Calmet Paving Co.,** Zionsville, Ind., LB $903,048, est. $1,013,388 (7 bidders), c. conc. base wid'n. bit. resurf. and c. conc. 5.169 mi. Road N 27, from SR 44 in Liberty to 1.1 mi. south of Union-Wayne County line, F-616 (3) incl. 2 rein.-con. girders and 1 rein.-con. slab structures, extended at 3.9, 4.1 and 4.4 mi. north of Liberty, F-616 (5), Contr. No. R-4142, Union Co.;

Ind.—**L. P. Cavette Co.,** 511 Shepherd Ave., Lockland 15, O., LB $634,022, est. $711,469 (5 bidders), bit. aggreg. on macad. base 8.64 mi. Road 60 from just west of Campbellsburg to SR 56 west of Salem, S 622 (6), Contr. No. R-4143, Washington Co.;

Ind.—**Traylor Bros., Inc.,** Up. Mt. Vernon Rd., Evansville, Ind., LB $333,788, est. $392,508 (2 bidders), c. conc. 0.394 mi. from junction with SR 158 to west corporation line of Bedford, S-798 (1) and 1.088 mi. Road No. 450 from west corporation line of Bedford to "Q" St., US-798 (3), Contr. No. R-4144, Lawrence Co. CD 4/29.

▲ **ILLINOIS**—Illinois State Toll Hy Comn., 20 N. Wacker Dr., Chicago,

S. J. Groves & Sons Co., 1104 W. Reynolds St., Springfield, Ill., **Arcole Midwest Corp.,** 3225 Main St., Evanston, Ill., and **L. B. Strandberg & Sons, Inc.,** 608 S. Dearborn St., Chicago, Ill., LB $12,135,670. Contr. N-8-A, grading, drainage, paving, appurtenances erecting concrete bridges 2.07 mi. Tri-State Routes also 1.28 mi. N. Rte. and approx. 4.3 mi. interchange connectors and crossing MSP&SSM R.R. Bids May 16. CD 4/19.

▲ **C. Rallo Contg. Co., Inc.,** 5000 Kemper Ave., St. Louis 9, Mo., LB Est. $2,000,000. 2 concrete abutments and 17 concrete approach piers for proposed vertical lift railroad bridge over Illinois River at Valley City, ILLINOIS. Wabash Railroad Co., Wm. J. Hedley, ch. engr., 1402 Railway Exchange Bldg., St. Louis 1, Mo. Bids May 15. CD 4/29.

Keno Constr. Inc., Highland Park, Ill., LB $366,600 (4 bidders) 4 three-span bridges with pretensioned prestressed precase concrete decks abutments, piers and work, Beech St., Cedar St., Forest Ave. and Ravine Dr. Bridges in easterly part of city, HIGHLAND PARK, ILL. City, City Hall, Highland Park, Ill. Bids May 20. CD 5/7.

Badger Constr. Co., 229 E. Wisconsin Ave., Milwaukee 2, Wis., CA - $91,658, bituminous surf. streets, SHOREWOOD, WIS. Village, 3930 N. Murray Ave., Milwaukee, Wis. R. F. Horn, Shorewood, Wis., village engr. Bids May 20.

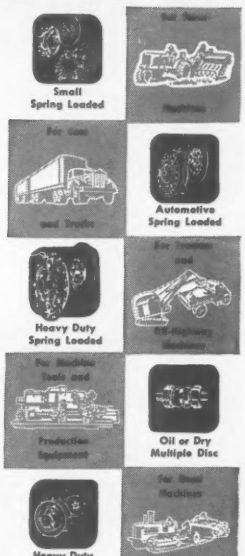
R. W. Constr. Co., 3140 W. Fond du Lac Ave., Milwaukee, Wis., CA $130,810. sewers in W. Silver Spring Dr., MILWAUKEE, WIS. City, City Hall, Milwaukee, Wis. Bids May 15, awarded May 2. CD 5/13;
U. S. Sewer Co., 1788 N. Water St., Milwaukee, Wis., CA $123,346, sewers in S. 74 St. (MILWAUKEE, WIS.).

White Constr. Co., 828 N. Broadway, Milwaukee 2, Wis., CA $85,004, resurf. various streets, WHITEFISH BAY, WIS. Village, 801 E. Lexington Blvd., Milwaukee 17, Wis. John Katzban, Whitefish Bay, Wis., village engr. Bids May 17.

Angell Constr. Co., P. O. Box 5, Lansing, Mich., CA $134,681, SAD-1-1955, aggreg. surf. prime and double

ROCKFORD

WHICH KIND OF CLUTCH ?



There is no one stock answer to every power transmission control problem. That is why ROCKFORD clutch engineers can be of practical help in designing applications that will increase *your* product's efficiency and reduce servicing down-time.

An engineered-to-the-job ROCKFORD CLUTCH application involves recommendations covering the proper type — spring-loaded, over-center, multiple-disc, gear-tooth or splined-to-shaft drive —as well as torque rating, shock-load absorption, slippage control, vibration dampening and provision for frequent drive shaft reversals.

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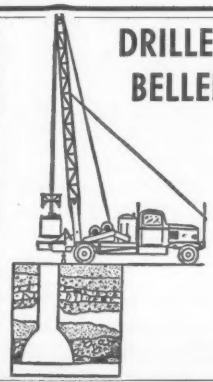
CLUTCHES



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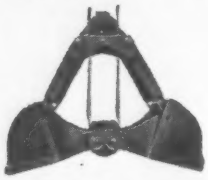

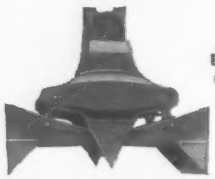

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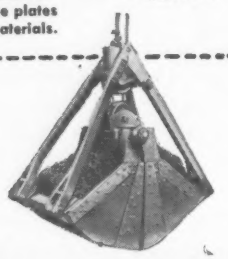

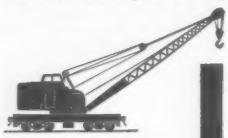

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4.86 mi. Willow Hy., Grand Ledge, CHARLOTTE, MICH. Bd. Rd. Comrs. Eaton Co. Court House, Charlotte, Mich. Bids Apr. 22. CD 4/11.

BUILDINGS—LB & CA

Durek Bros., Inc., Defiance, O., CA Est. $500,000. 200x250 ft. FACTORY, DEFIANCE, O. Defiance Mfg. Co., Robt. W. Compo, pres., Defiance, O.

Twin Oaks Constr. Co., 1900 Euclid Bldg., Cleveland 15, O. Own Forces. $750,000. 61 HOMES, Rte. 57 and Bell Ave., ELYRIA, O.

Yeager Constr. Co., 1143-45 10 St., Portsmouth, O., CA $451,000. HIGH SCHOOL, WHEELERSBURG, O. Local School Dist., Wheelersburg, O. Bids May 2, awarded May 17. CD 4/12.

Fred C. Rowley & Sons, Inc., 4732 Calumet Ave., Hammdon, Ind., CA $100,000. 1 story, brick MANUFACTURING BLDG. E. Dunes Hy., GARY, IND. Taylor Forge & Pipe Works, 2500 E. Dunes Hy., Gary, Ind. CD 5/9.

Abell Howe Co., 53 W. Jackson Blvd., Chicago, Ill., CA $180,000. 1 story, no bsmnt. SHIPPING BLDG., 9039 S. Woodlawn, CHICAGO, ILL. Naylor Pipe Co., 1230 E. 92 St., Chicago, Ill. R. H. Maveety, 53 W. Jackson Blvd., Chicago, Ill., archt.

▲ **Lamp Constr. Co.**, 112 Division St., Elgin, Ill., CA $1,150,000. 5 story, brick HOSPITAL addn., 934 Center St., EIGIN, ILL. Sherman Hospital, 934 Center St., Elgin, Ill. CD 2/6.

▲ **John F. Uznis Builders, Inc.**, 24610 Michigan Ave., Dearborn, Mich., Owner Builds. $1,600,000. 100 brick HOMES, Maplewood and Sunset Drive, DEARBORN, MICH.

Krieghoff Co., 6661 French St., Detroit, Mich., CA $987,815, CHURCH, DETROIT, MICH., St. Peter and Paul Church, c/o Donaldson & Meier, archts., 16040 W. McNichols St., Detroit, Mich. Bids Apr. 15. CD 4/16.

Palmer-Smith Co., 415 Brainard St., Detroit, Mich., CA $368,535, general contract HIGH SCHOOL, Fed. Proj. Mich. 56-C-203-B-6, GARDEN CITY, MICH., Garden City Pub. Schools, William Fischer, secy., 29128 Dover St., Garden City, Mich. Bids Apr. 16. CD 3/21.

City, Marie T. Baron, clk., rejected bids Apr. 12. D.P.W. GARAGE, HARPER WOODS, MICH., LB $115,000. CD 3/21.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

Neb., Falls City—BA 6/12—Richardson Co., Falls City, bridge over Nemaha River, $75,000. Harold Hoskins & Assoc., 1630 Q St., Lincoln, engrs. Bids 5/2 postponed. CD 4/11.

† **Mo., Grandview**—ROCKER STORAGE ADDN.—BA On Or About 6/14—U. S. Eng., 1800 Federal Office Building, Kansas City, Zone 6, constr. rocker storage addn., Richards Gebaur Air Force Base, ENG-23-028-57-94.

† **Nebraska**—BA 6/17—Soil Conservation Service, 134 S. 12 St., Lincoln, grade dam, Indian Creek Watershed, near Syracuse, Otoe Co., 42-NB-57.

Minnesota—GAP FILLER FACILITY—BA About 6/19—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul, Zone 1, gap filler facility and appurtenances near Elbow Lake and Middle River, ENG-21-018-57-10. Plans deposit $10.

† **Minnesota** — RECREATION FACILITIES — BA About 6/21—U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul Zone 1, recreation facilities, multi-purpose building and appurtenances, Grand Rapids and Willmar, ENG-21-018-57-23.

▲ **Tex., Texarkana**—BA 6/26—City, c/o A. P. Miller, mayor, Contr. 1-Lake Pump Station; Contr. 2-raw water supply line; Contr. 3 water purification plant; Contr. 4-treated water supply line; Contr. 5-pumping equipment, $2,000,000. Plans deposit $50. Freese & Nichols, 407 Danciger Bldg., Fort Worth, Tex. engr. CD 1/29.

† **Tex. El Paso**—BA 6/27—U. S. Eng., Box 1538, Albuquerque, N. M., hydrant fueling sys. at Biggs Air Force Base, ENG-29-005-57-105. CD 8/23.

BUILDINGS—BA

Iowa, Tripoli—SCHOOL—BA 6/12—Bd. Educ., Tripoli, high school $385,000. N. C. Prail, 346 Insurance Exch. Bldg., Des Moines, archt. CD 4/24.

Mo., St. Louis—FIRE ALARM HEADQUARTERS—BA 6/25—City, Frank J. McDevitt, pres. Bd. Pub. Service, 304 City Hall, 12th Blvd. and Market St., Zone 3, constr. 1 story, 122x86 ft. brick, masonry, fire alarm headquarters bldg., 4971 Oakland Ave. $360,000. Hellmuth, Obata & Kassabaum, 315 N. 10th St., archt. Wm. C. E. Becker, 411 N. 7th St., structural engr. John D. Falvey, 316 N. 8th St., mechanical engr. CD 4/26/43.

† **Tex., Bryan**—RESERVE TRAINING CENTER—BA 6/25 U. S. Eng., P. O. Box 1600, Fort Worth, 400 man reserve training center, Army, ENG-41-443-57-50.

HEAVY CONSTRUCTION—LB & CA

▲ **A. Barbarossa & Sons Inc.**, St. Cloud, Minn. and **Nodland Constr. Co.**, Alexandria, Minn., CA $986,059. Trunk Sewer (A) 28,425 lin. ft. ST. LOUIS PARK, MINN. Village J. Justad, clk., St. Louis Park, Minn. Grand total $2,267,917. Bids May 13. CD 5/20, under LB.

Lametti & Sons, 211 North Pascal St., St. Paul, Minn. and **P. Lametti Constr. Co.**, 615 Drake St., St. Paul, Minn., CA $616,983 (B) 24,350 lin. ft. trunk sewers;

(Continued on page 146)

new Highway 40 by-pass gets a sturdy "backbone" with LACLEDE WELDED WIRE FABRIC

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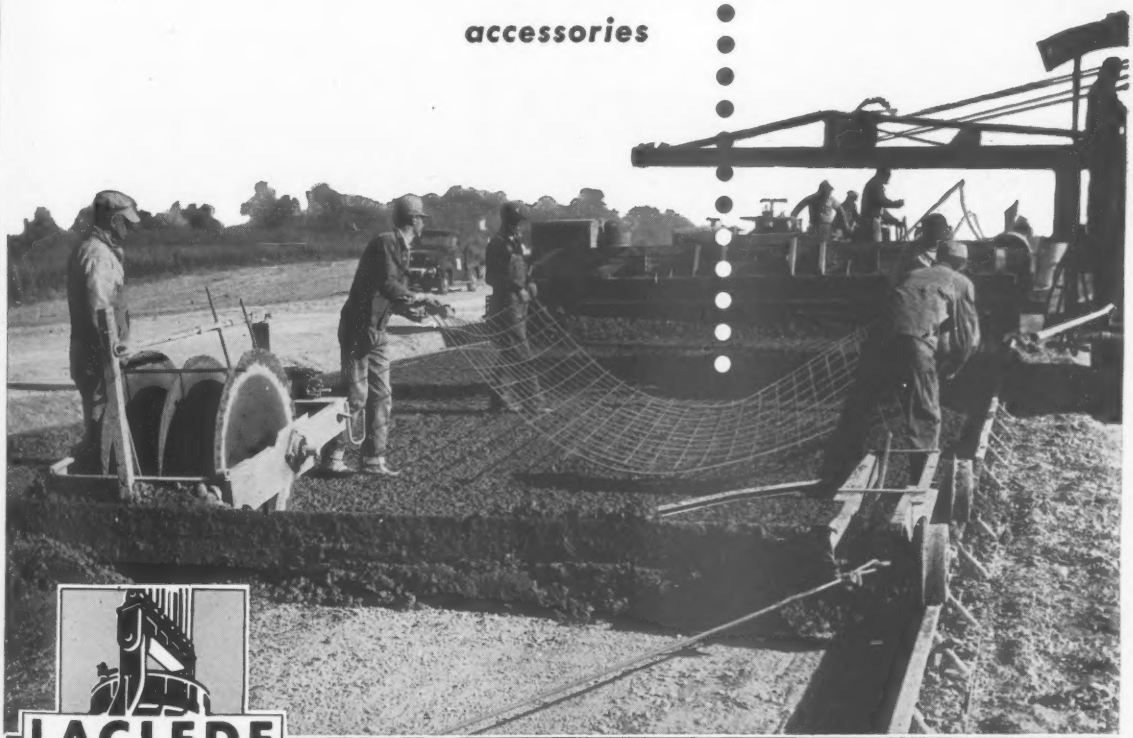

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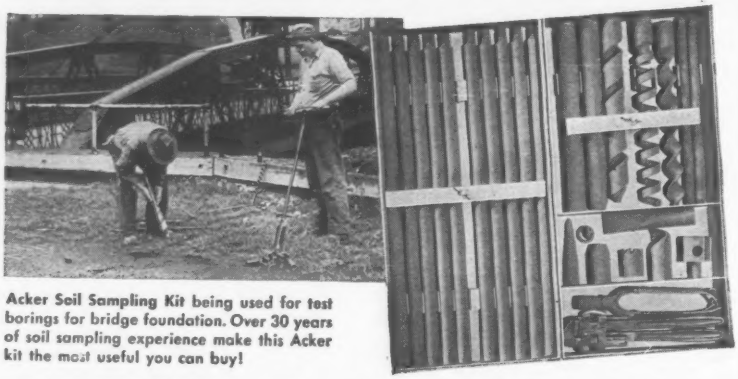

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a complete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment

(Continued from page 144)

CA $654,875 (C) 25,025 lin. ft. trunk sewers. (St. Louis Park, Minn.).

Scheide Constr. Co., Fort Dodge, Iowa, CA $79,236 (5 bidders) surf., BOONE, IOWA. Boone Co., Boone, Iowa. Bids May 6.

Hallett Constr. Co., Crosby, Minn., CA $194,950. street imprvs., FAIRFIELD, IOWA. City, Fairfield, Iowa. A. A. Reichstein, Fairfield, Iowa, engr.

Dan Christensen, 1936 20 St. N.W., Cedar Rapids, Iowa, LB $75,113, (6 bidders) sewers, SPRINGVILLE, IOWA. City, Springville, Iowa. Bids Apr. 29. H. R. Green Co., 417 1 Ave. S.E. Cedar Rapids, Iowa, engrs.

Baebler Constr. Co., 2228 Big Bend Blvd., St. Louis 17, Mo., LB $186,800, est. $300,000, general contract 2 level rein.-con. 17,266 sq. ft. City-County Civil Defense Center, at Howard Bend Pumping Station, of St. Louis Water Division on Missouri River, St. Louis County, ST. LOUIS, MO. Office Civil Defense Admin., 6100 Clayton Rd. in Forest Park and city of St. Louis and County of St. Louis, Clayton, (joint owners), Bids May 16. CD 4/24;
Thomas J. Sheehan, 2233 Olive St., St. Louis 3, Mo., LB $116,760, mechanical contract, for Civil Defense Center, (St. Louis, Mo.)

J. H. Leveck & Sons, Cantrell and River Rd., Little Rock, Ark., CA $150,000, est. $135,404. constr. Lake Wilhelmena Dam, near Mena, earthen dam, spillway, etc., ARKANSAS. Arkansas Game & Fish Comn., Little Rock, Ark., Marion L. Crist & Assocs., Inc., Union Life Bldg., Little Rock, Ark., engr. Bids 4/23, CD 1/31/46.

† **U. S. Eng.**, P. O. Box 867, Little Rock, Ark., cancelled bids to have opened May 16, Dual Access Road, second increment, ENG-03-050-57-35 JACKSONVILLE, ARK. Est. $100,000-$500,000. CD 4/17.

▲† **Southwest Town Constr. Co.**, Hazel Crest, Ill., CA $1,832,043 Sch. 1; Sch. 1 add. $20,050; Sch. 2 $1,502,360, Sch. 2 add. $16,200 housing Grand Forks Air Force Base, Inv. 25-066-57-81, GRAND FORKS, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids May 10. CD 5/17, under LB.

† **Healy Plumbing & Heating Co.**, 278 W. Kellogg Blvd., St. Paul, Minn. LB $419,564 (6 bidders) heating sys. addn., Grand Forks Air Force Base, Inv. 25-066-57-94, GRAND FORKS, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids May 15. CD 4/22.

†**Lowe Constr. Co.**, 2325 9 Ave. N., Billings Mont., LB $930,739 (6 bidders) ammunition storage, ADC Type, Minot Air Force Base, Inv. 25-066-57-91, MINOT, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids May 21. CD 4/24.

†**H. Halverson, Inc.**, E 5019 Sprague St., Spokane, Wash., LB $571,937 (7 bidders) ready aircraft shelter Minot Air Force Base, Inv. 25-066-57-69, MINOT, N. D. U.S. Eng., 1709 Jackson St., Omaha, Neb. Bids May 17. CD 4/24.

SOUTH DAKOTA—State Hy. Dpt., Pierre,

S. D.—Megarry Brothers, St. Cloud, Minn., CA $225,507, (10 bidders), base course repair and bit. surf. 11.611 mi. Proj. No. 23 F 053-4, Lake Co.;

S. D.—Summit Construction Co., 728 St. Anne, Rapid City, S. D., CA $389,522 (15 bidders) base course repair and bit. surf. 18.093 mi. Proj. No. 24 S 1112 (1) & S 1171 (1) Perkins Co. Grand total $614,600. Bids May 14, CD 5/3.

†**Costa Co.**, WOW Bldg., Omaha, Neb., CA $672,743 repairing dikes and revetment Missouri River at Lower Sandy Point Bend-Blair, Inv. 25-066-57-103 NEBRASKA, U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids May 9. CD 5/15, under LB.

KANSAS—State Hy. Comn., Hutchinson,

Kan.—Broce & Smith Contractors, Inc., Larned, Kan., CA $92,788 (7 bidders), 7.999 mi. A-A base course, Proj. No. 93 S 45 (4), Stafford Co.; CA $109,877 (9 bidders) AA base course, 5.909 mi. beginning east of Arkansas River Bridge, east of Kinsley, thence east on US-50, Proj. No. 50-24 F 050-3 (15), Edwards Co.;

Kan.—Southwest Sand & Gravel Co., Great Bend, Kan., CA $290,837 (10 bidders), dense graded surf. course roadmix-Class C-1, 11.04 mi. beginning 513.18 ft. south of Jct. of US-183 & K-4 in LaCrosse then north on US-183, except thru Liebenthal; 183-83-26 F 031-2 (6) Parts I & II, Rush and Ellis Counties. Grand total $493,502. CD 5/2. Bids May 16.

J. A. Tobin, 3701 Rainbow Blvd., Kansas City, Kan., LB $133,823, est $175,262 (5 bidders) approach, lighting sys., and 4 lane roadway on James St. bridge over Kansas Rd. KANSAS CITY, KAN. Owner c/o R. U. Jansen, 710 N. 7th St., Kansas City, Mo., Sverdrup & Parcel, Inc., 915 Olive, St. Louis, Mo., engr. CD 11/5/54.

†**Koss Constr. Co.**, 510 Iowa Des Moines Bank Bldg., Des Moines, Iowa, CA $361,288, addnl. aircraft parking area, Naval Air Station, Spec. 8431-56, OLATHE, KAN. Ninth Naval Dist. Bldg. 1-A, Great Lakes, Ill. Bids Apr. 2.

Blalock Constr. Co., P. O. Box 353, Pauls Valley, Okla., LB $391,600; sewage treatment plant and outfall sewer, CORSICANA, TEX. City, c/o Tom. Eady, mayor, Corsicana, Tex. Bids May 21, CD 5/3;
Elm Fork Constr. Co., P. O. Box 13186, Dallas, Tex., LB $67,142 (CORSICANA, TEX.)

▲ **MONTANA**—State Hy. Comn., Helena,

Mont.—Union Constr. Co., Missoula, Mont., CA $90,803, grav., bit. surf. and drainage 2.4 mi. 29th St.—Middlesex Ave. Road and Higgins Ave. extension south of Missoula Rd., Missoula Co.;

Mont.—Holland Constr. Co., Bozeman, Mont., CA $247,148, grav., bit. surf. and drainage 4.82 mi. Moiese-Charlo-Nine Pipe Road, Lake Co.;

Mont.—Kiely Constr. Co., E. of Butte, Butte, Mont., CA $330,672, grav., plant-mix-oil and drainage 1.36 mi. City of Dillon on Dillon-Butte Rd., Beaverhead Co.;

Mont.—Naranche & Konda, 2801 S. Montana, Butte, Mont., CA $428,289, grav. 11.52 mi. Gardiner-Livingston Rd., Park Co.;

(Continued on page 148)

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Right now, with production boom demands growing, is the time to take a good look at your reproduction equipment. If it's more than a few years old, chances are it's costing you unnecessary time, man hours, and money.

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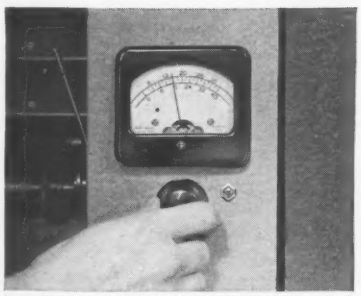

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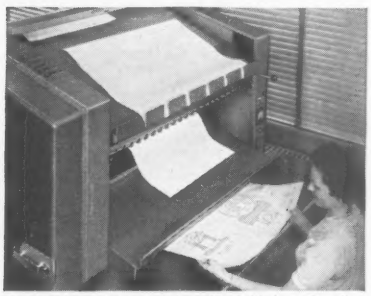

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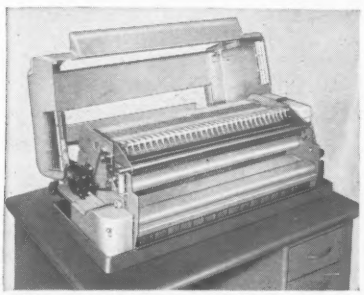

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(Continued from page 146)

Mont.—**S. Birch & Sons**, 616 10 Ave. S., Great Falls, Mont., CA $448,507, grav., bit. surf. 9.96 mi. Lewiston-Roy Rd., Fergus Co., grand total $1,545,419. Bids May 23, CD 5/8.

†**Lembke-Chough & King, Inc.**, Box 455, Albuquerque, N. M., LB $79,372, Carlsbad Caverns National Park nursery and kennels, Proj. B-42-2, NEW MEXICO. National Park Service, Dpt. Interior, 1000 Geary St., San Francisco, 9, Calif. Bids Apr. 22. CD 4/12.

†**Neilson-Dugan**, 110 W. 13 Ave., Denver, Colo., LB $78,540 flood control repairs, Raton, CIVENG 29-005-57-11 NEW MEXICO U.S. Eng., Box 1538, Albuquerque, N. M. Bids May 3. CD 4/11.

†**Robert E. McKee, General Contr. Inc.**, Box 652, El Paso, Tex., CA $655,783, warm-up holding pads, Walker Air Force Base, Inv. ENG 29-005-57-9, ROSEWELL, N. M. U.S. Eng., Box 1538, Albuquerque, N. M. Bids Apr. 26. CD 5/22, under LB.

BUILDINGS—LB & CA

▲ **Young, Givens & Young, Inc.**, 700 St. Francis St., Florissant, Mo., Owner Builds. $1,250,000, 1 story, full bsmnt., redwood siding, 2,000 sq. ft. and up, 155 RESIDENCES, incl. GARAGE and sheltered patio inn Francesca subdivision at Shackelford Rd. and Lindsay Lane, FLORISSANT, MO.

E. A. Brunson Constr. Co., 8125 Maryland St., St. Louis, Mo., CA $344,100, REBSTOCK HALL addn., Washington University, ST. LOUIS, MO. Washington University, Ethan A. H. Shepley, chancellor, Lindell and Skinker Blvds., St. Louis 5, Mo. Bids Mar. 27, CD 3/20.

Bernard McManus, 134 West Jefferson Ave., Kirkwood 22, Mo., Owner Builds. $400,000. brick, concrete, etc., 33 RESIDENCES, in Des Peres Meadows Subdivision on Manchester Rd., west of Geyer Rd., ST. LOUIS COUNTY, MO., Daniel Mullen, 2417 Woodson Rd., Overland 14, Mo., archt.

Phoenix Development Co., 6617 Center St., Omaha, Neb., CA Est. $700,000. 61 DWELLINGS, BISMARCK, N. D. Marian Park Corp., Bismarck, N. D.

Charles Sieben, Grafton, N. D., CA Approx. $150,000. starch FACTORY, GRAFTON, N. D. Owner c/o Claude Deitweiller, engr., Twin Falls, Idaho. CD 1/15.

Hogenson Constr. Co., Flour Exchange Bldg., Minneapolis, Minn., CA $160,000. GRAIN ELEVATOR, CASTLEWOOD, S. D. Farmers Grain & Produce Co., Castlewood, S. D.

M. A. Garland, Inc., 2202 S. 8th St., Rapid City, S. D., LB $151,250. BLDGS. and piers for State Cement Plant, RAPID CITY, S. D. State Cement Co., Rapid City, S. D. Bids May 6. CD 10/31.

Haren & Laughlin Constr. Co., 953 Minnesota St., Kansasa City, Kan., CA Est. $200,000. PLANT, LENEXA, KAN. Smith & Loveless, 62 and Merriman Dr., Merriman, Kan. D. R. Hollis & David Miller, Overland Park, Kan., archts.

C. A. Doolittle Jr. Constr. Co., 331 N. Waco St., Wichita, Kan., CA $959,405. general contract, Wm. M. Jardine Intermediate SCHOOL, WICHITA, KAN. Bd. Educ., 428 S. Broadway, Wichita, Kan. Bids May 2.

Builders Inc., 352 N. Broadway, Wichita, Kan. Owner Builds, $500,000, 3 story, 100x200 ft. rein.-con., brick, cutan wall, Park Lane SHOPPING CENTER addn., Olive and Lincoln Sts., WICHITA, KAN., Robert Morris, Derby Bldg., Wichita, Kan., archt.

▲ **B. L. McGee**, Box 782, Austin, Tex., CA $1,840,199, STATE OFFICE BLDG., AUSTIN, TEX. State of Texas, State Bldg. Comn., 110 W. 14 St., Austin, Tex. Bids Jan. 22, awarded May 20. CD 2/5, under LB.

Braselton Constr. Co., Box 4027, Corpus Christi, Tex., LB $333,350. CHEMICAL LABORATORY, BOILER PLANT, INSTRUMENT PANEL, BISHOP, TEX. Celanese Corp. of America, 180 Madison Ave., New York, N. Y. Bids May 10, CD 5/3.

Metallic Bldg. Co., 4601 Homes St., Houston, Tex., CA $135,000. PLANT EXPANSION, HOUSTON, TEX. Tube-Kote, Inc., 2727 Homes St., Houston, Tex. CD 5/23.

Harris Co., c/o Comrs. Courth, Courthouse, Houston, Tex., cancelled bids to have been opened June 14, JUVENILE DETENTION CENTER, HOUSTON, TEX. Over $500,000. CD 5/21.

▲ **Gregg Co.**, c/o Jno. L. Allen, comr., Courthouse, Longview, Tex., cancelled bids to have been opened May 13, Gregg, MEMORIAL HOSPITAL addn., alterations, LONGVIEW, TEX. Est. $1,000,000. CD 4/8.

Texarkana Constr. Co., Box 1079, Texarkana, Ark.-Tex., LB $422,500. SHOP WAREHOUSE, LABORATORY, PARIS, TEX. Texas State Hy. Dpt., Austin, Tex. Bids May 16, CD 5/7.

D. F. Orts, 112 Arvis St., San Antonio 9, Tex., LB $819,990. JAMES RUSSELL LOWELL JUNIOR HIGH SCHOOL, SAN ANTONIO, TEX. San Antonio Independent School Dist., Lavaca annd Matagorda Sts., San Antonio, Tex. Bids May 16, CD 4/30.

FAR WEST

HEAVY CONSTRUCTION—BA

† **Wash., Seattle**—ATHLETIC COURTS—BA 6/14—U. S. Eng., 4735 E. Marginal Way, twelve 60x120 ft. asphaltic concrete paved athletic courts in Seattle defense area, ENG-45-108-57-147.

† **Idaho**—BA 6/17—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., grading access facilities for reservoir area, Lucky Peak Dam, Boise, CIVENG-45-164-57-80. CD 12/4/52.

† **Wash., Tacoma**—WATER STORAGE TANK, etc.—BA 6/18—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, 2,200 sq. ft. rein.-con. jet test cell with 15,000-gal. water tank at McChord AFB, ENG-45-108-57-149. CD 8/21.

BUILDINGS—BA

† **Wash., Seattle**—TRAINING CENTER—BA 6/14—U. S. Eng., 4735 E. Marginal Way, 1 and 2 story, 20,000 sq. ft., rein.-con. army reserve training center at Fort Lawton, ENG-45-108-57-140. Bid date changed. CD 5/14.

▲† **Idaho, Arco**—REACTOR—BA 6/21—Atomic Energy Comn., Idaho Operations Office, Idaho Falls, 60x92 ft. reactor bldg., reactor vessel, etc. for Spert II facility at National Reactor Testing Station, Contr. AT-(10-1)887. $1,300,000. CD 5/17.

HEAVY CONSTRUCTION—LB & CA

† **Layne & Bowler Pump Co.**, 2943 S. Vail St., Montebello, Calif., CA $79,625, 9 deep well turbine-type pumping units for wells, Minidoka Proj., Spec. 100X-290, IDAHO. Bureau Reclamation, Dpt. Interior, Boise, Idaho. Bids Apr. 18, awarded May 13. CD 4/10.

▲ **Tolboe & Harlin Constr. Co.**, 3091 S. Main St., Salt Lake City, Utah, LB $3,843,280. Part II, sewage treatment plant constr. in Central Weber Imprvt. Dist., OGDEN, UTAH. City Bd. Trustees, City-County Bldg., Ogden, Utah. Bids May 20. CD 4/12.

† **Union Iron Works**, 24 California St., San Francisco, Calif., LB $598,157, Sch. B; LB $809,056 Sch. A, steam generators for use in Air Force Marquardt Jet Laboratory, for Dpt. Air Force, OGDEN, UTAH. Marquardt Aircraft Co., 16555 Saticoy St., Van Nuys, Calif. Bids May 10. CD 4/29.

ARIZONA—State Hy. Dpt., 17th Ave. and Jackson St., Phoenix,

Ariz.—**T. M. K. Constr. Co.**, 2750 W. McDowell St., Phoenix, Ariz., CA $577,884 select mat. agg. base, bit. road mix, seal coat 4.3 mi. State Rte. 77, Oracle Jct.-Globe Hy., Gila. Co. CD 6/17/55.

† **Collins Roof & Floor, Inc.**, Las Vegas, Nev., LB $71,900 (11 bidders) protective surf. Hoover Power plant and valve roofs, Boulder Canyon Proj., Spec. DC 4880, ARIZONA, CALIFORNIA AND NEVADA. Bureau Reclamation, Dpt. Interior, Boulder City, Nev. Bids May 16. CD 5/7.

† **John H. Evans & Co.**, P. O. Box 694, Phoenix, Ariz., LB $174,938 (2 bidders) control tower, Park Naval Air Facility, Spec. 9969-56, LITCHFIELD PARK, ARIZ. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids May 17, CD 12/16/55, under LB.

NEVADA—Dpt. Hys., State Office Bldg., Carson City,

Isbell Constr. Co., S. Virginia Rd., Reno, Nev., CA $643,664. portion 1.998 mi. Primary & Sec. Hy. Systems on Carson St., Ormsby Co. Bids May 16. CD 5/1.

WASHINGTON—State Hy. Comn., Dpt. Hys., Olympia, Bids opened May 21,

Wash.—**E. McKellar**, Chelan, Wash., LB $162,409 (8 bidders) rein.-con. box girder bridge over Wenatchee River on Division St. in Cashmere together with drainage and grading approaches 0.109 mi. Primary St. Hy. 2 FAP No. F-028-1(12), Chelan Co.;

Wash.—**Woodworth & Co.**, 1200 E. D St., Tacoma, Wash., LB $224,458 (8 bidders), 2 rein.-con. slab bridges and rein.-con. box girder bridge for New York Ave. undercrossing 0.013 mi. Primary St. Hy. 1 FAP No. I-001-2(16), Pierce Co.;

Wash.—**Lockyear & White**, Longview, Wash., LB $118,422 (8 bidders), 2 rein.-con. slab bridges over Whatcom Creek 0.031 mi. Primary St. Hy. 1 FAP No. I-001-5(18), Whatcom Co. CD 5/7.

WASHINGTON—State Hy. Comn., Dpt. Hys., Olympia, Bids opened May 21,

Wash.—**J. A. Bryant & C. Braden**, Hutton Bldg., Spokane, Wash., LB $158,398 (2 bidders), surf. Type I-1 b. conc. paving and stockpiling selected roadway borrow, maint. rock, crushed cover stone, crushed stone surf. and mineral aggregs. 1.866 mi. Primary St. Hy. 5, Kosmos to Glenoma, Lewis Co.;

Wash.—**K. L. Goulter & Son**, Dexter Horton Bldg., Seattle 4, Wash., LB $197,334 (4 bidders), clearing, draining, grading 1.241 mi. Primary St. Hy. 2, G. N. Railway undercrossing to Hay Canyon, FAP No. F-029-1(11), Chelan Co.;

Wash.—**C. E. O'Neal, Inc.**, Ellensburg, Wash., LB $210,284 (8 bidders), clearing, draining and grading 7.165 mi. Primary St. Hy. 10, Malott to Okanogan, FAP No. F-029-2(13), Okanogan Co. CD 5/7.

West Coast Telephone Co., Everett, Wash., Day Labor, $750,000. cable laying for imprv. service in area between Mount Vernon and Seattle, EVERETT, WASH.

Pacific Tel. & Tel. Co., 3 Ave. and Seneca St., Seattle 1, Wash., Day Labor. $740,000. cable laying for improved telephone service in area north of SEATTLE, WASH. CD 3/11.

▲ **Manson Constr. Eng. Co.**, 5209 E. Marginal Way, Seattle, Wash., CA $1,019,358, est. $900,000 4,272 ft. pile, rock and concrete bulkhead; 1650 ft. rock bulkhead; 900 ft. breakwater pier and boat launching ramp for Shilshole Bay moorage project, SEATTLE, WASH. Port of Seattle, Bell St. Terminal, Seattle 1, Wash. Bids Apr. 30. CD 5/6, under LB.

City, City Hall, Tacoma, Wash., rejected bids barrier wall at Cushman Power Plant No. 1, TACOMA, WASH. LB $48,388. New bids 5/27. CD 5/22, under LB.

▲† **Green Constr. Co.**, 321 Locust St., Des Moines, Iowa, LB $6,539,934, est. $6,863,460 (12 bidders) main dam, buildings and appurtenances for Success Dam, Tule River CIVENG 04-167-57-83, CALIFORNIA. U. S. Eng., 1208 8 St., Sacramento, Calif. Bids May 24. CD 4/29.

† **Manco Constr. Co.**, 3754 Long Beach Blvd., Long Beach, Calif., LB $792,986 (12 bidders) central heating plant and distr. sys. at Naval Amphibious Base, Spec. 74-1-56, CORONADO, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids May 7, CD 8/28.

Loren A. Pierce, 2333 N. Niagra St., Burbank, Calif., CA $96,296 grading, street imprvs. sewers, Porter Junior High School, LOS ANGELES, CALIF. Los Angeles, Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids May 7, awarded May 17.

R. C. R. Corp., 2240 Parkway Dr., El Monte, Calif., LB $341,341; sewage treatment plant, effluent pump station and reconstr. pumping station, SAN CLEMENTE, CALIF. City Council, City Hall, San Clemente, Calif. Currie Eng. Co., Andresen Bldg., San Bernardino, Calif., engr. Bids May 15. CD 6/20.

Dennis Constr. Co., P. O. Box 3158, Hillcrest Station, San Diego, Calif., LB $155,519 (4 bidders) imprv. Sumac Dr., Modesto St., Juniper St., Laurel St., Doc 551664 SAN DIEGO, CALIF. City, Civic Center, 1600 Pacific Hy., San Diego, Calif. Bids May 17.

BUILDINGS—LB & CA

Crown Constr. Co., 5059 W. Pico Blvd., Los Angeles, Calif. Owner Builds. $606,500. 1412 and 1286 sq. ft. 46 DWELLINGS, Jackman St., 17th St. West, Camolin St., LANCASTER, CALIF.

▲ **Paul W. Speer, Inc.**, 3425 Cahuenga Blvd., Los Angeles, Calif., CA $2,241,000. OLIVE VISTA JUNIOR HIGH SCHOOL, San Fernando, LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids May 9, awarded May 17. CD 5/13, under LB.

Brunzell Constr. Co., 2945 Higuera St., Culver City, Calif., LB $627,670 (8 bidders) 3 story, lift slab, 3 wings, each 83 x 33 ft., DORMITORY, 7101 W. 80th St., LOS ANGELES, CALIF. Loyola University, c/o Albert C. Martin & Assocs., archt., 333 S. Beaudry Ave., Los Angeles, Calif. Bids May 17, May 12/21.

H. C. Elliott Constr. Co., Haven Homes, 3822 E. Colorado St., Pasadena, Calif., Owner Builds. $447,600 39 stucco DWELLINGS, Essex Ave., Embassy Place and E. Alvarado St., POMONA, CALIF.

▲ **Pacific Co., Engineers & Builders**, 801 Cedar St., Berkeley, Calif., CA Est. $4,350,000 design and construct 14 story APARTMENT, on Nob Hill, SAN FRANCISCO, CALIF. Albert-Lovett Co., c/o Hammerberg & Herman, archts. 2941 Telegraph Ave., Berkeley, Calif. CD 1/15.

Dike & Calgrove, 419 E. 17th St., Costa Mesa, Calif., CA $375,000. 42 frame DWELLINGS, SANTA ANA, CALIF. Santa Development Co., 419 E. 17th St., Costa Mesa, Calif.

CANADA

HEAVY CONSTRUCTION—BA

Ont., Toronto—BA 6/10—Municipality of Metropolitan Toronto, 67 Adelaide St. E., remodeling, extending Humber Bridge on Lakeshore Rd. part of Lakeshore Expressway. Over $100,000. Plans deposit $50. A. D. Margison & Assocs. Ltd., 30 Eglinton Ave. E., in conjunction with DeLeuw & Cather & Co. of Canada Ltd., 52 St. Clair Ave. W., both in Toronto, engrs. CD 11/30/54, under Streets & Roads.

BUILDINGS—SLC

Ont., Toronto—FACTORY, etc.—American Resinous Chemicals of Canada Ltd., 20 Trenton Ave., soon lets contract 1 story, no bsmnt., 96x162 ft., concrete, concrete block factory and office. Coronation Dr. $150,000. Paul Sears, 1498 Yonge St., archt. Leah Kobayashi & Assocs., 490 Jarvis St., engrs. CD 4/10.

HEAVY CONSTRUCTION—LB & CA

ALBERTA—Alberta Govt., Parliament Bldgs., Edmonton,

Poole Constr. Co. Ltd., 10503 109 St., Edmonton, Alta., CA $362,117 (8 bidders) rein.-con. girder bridge over Oldman River Hy. 36, 11 mi. north of Taber. Bids Apr. 29, awarded May 16. CD 4/18.

ALBERTA—Alberta Govt., Parliament Bldgs., Edmonton,

Remington Constr. Co. Ltd., Carston, Alta., CA $348,930. rein.-con. girder bridge over Bow River on Hy. 36 south of Scandia. Awarded May 16.

▲ **ALBERTA**—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.,

Alta.—Thode Constr. Ltd., Seventh St. and Emerson Ave., Saskatoon, Sask., LB $437,250, bit. stab. base course Mile 14.2 to Mile. 29.7 Trans-Canada Hy. Banff National Park, Banff;

Alta.—McNamara Constr. Co. Ltd., 42 Industrial St., Leaside, Toronto, Ont., LB $643,470 bit. stab. base course Mile 2 to Mile 22 Banff-Jasper Hy., Banff National Park, Banff. CD 5/15.

▲ **ALBERTA**—Alberta Govt., Parliament Bldgs., Edmonton,

Alta.—Standard Gravel & Surfacing of Canada Ltd., 5340 1 St. S.W., Calgary, Alta., CA $511,250 (5 bidders) stab. grav. base course Hy. 14, 18 mi. from east of Viking to east of Jarrow; CA $689,080 (5 bidders) grading wid'n. and stab. grav. base course Hy. 2 from south of Red Deer to Hy. 11 and north 17 mi. to Lacombe; CA $606,195 (5 bidders) asph. plant mix surf. on Hy. 16 35 mi. from east of Pedley to Jasper Park Boundary; CA $205,662 (3 bidders) stab. grav. base course 10 mi. Hy. No. 5 from Mountain View to Watertown Park

Alta.—Shannon Constr. (Alberta) Ltd., Didsbury, Alta., CA $195,080 (7 bidders) grading, 9 mi. Hy. 25 from Picture Butte to Iron Springs;

Alta.—Mamczasca Construction, 2123 Victoria Crescent, Calgary, Alta., CA $521,050 (5 bidders) stab. gravel base course Hy. 43 from Bunn to Cherhill;

Alta.—F. W. Lamb & Sons Ltd., 1440 9 St. N.E., Calgary, Alta., CA $360,380, (10 bidders) grading 16 mi. Hy. No. 14 from north of Heath to Chauvin Grand total $3,088,701. Awarded May 16. CD 12/1/43.

(Continued on page 153)

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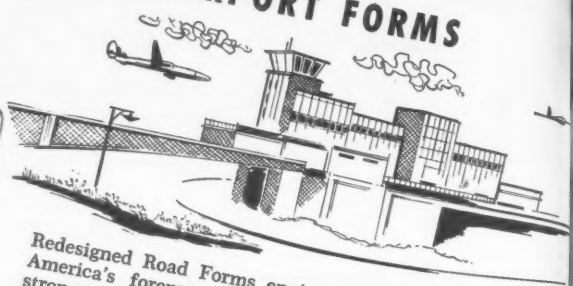
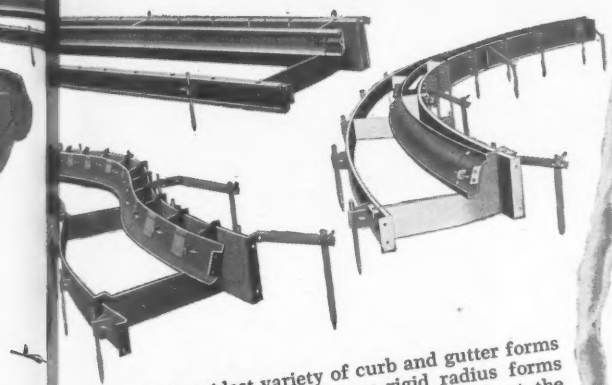


Redesigned Road Forms engineered by America's foremost form builder, are stronger, easier to align, faster setting than ever before. Built to contractors specifications, these new forms will take plenty of punishment and give years of service. They are now available with or without upturned base flange.

Heltzel's husky Dual Duty Forms have long been the favorites of contractors who build airport runways and ramps. These forms come in a number of double faces to enable contractors to pour two slab thicknesses with the same form.

Form Value

CURB AND GUTTER FORMS



Heltzel builds the widest variety of curb and gutter forms in the industry. Straight, flexible or rigid radius forms for any face and style. You'll want to know about the combined curb and gutter forms with the interchangeable sections that permit many styles from the same basic set . . . a real cost saver!

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Here's an improved design sidewalk form with built-in Heltzel quality that assures lifetime performance. Division plate slots are spaced in one foot increments for better pouring practice.

CURB FORMS

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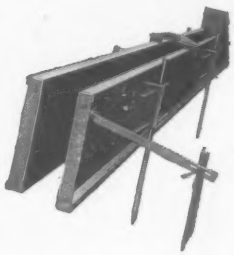
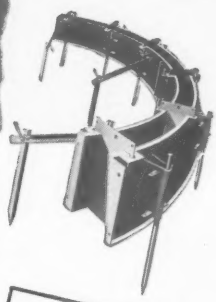
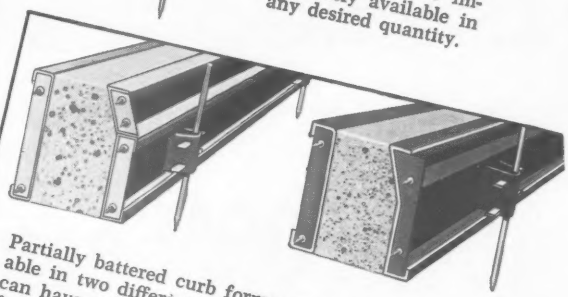




that have rerolled rail stakes. Battered or straight face in straight, fixed or flexible radius styles immediately available in any desired quantity.



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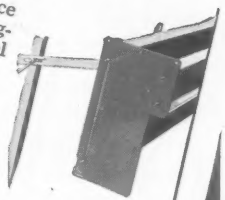

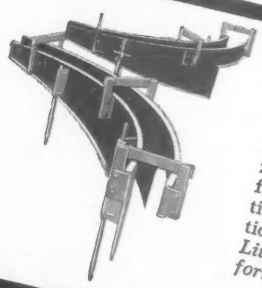

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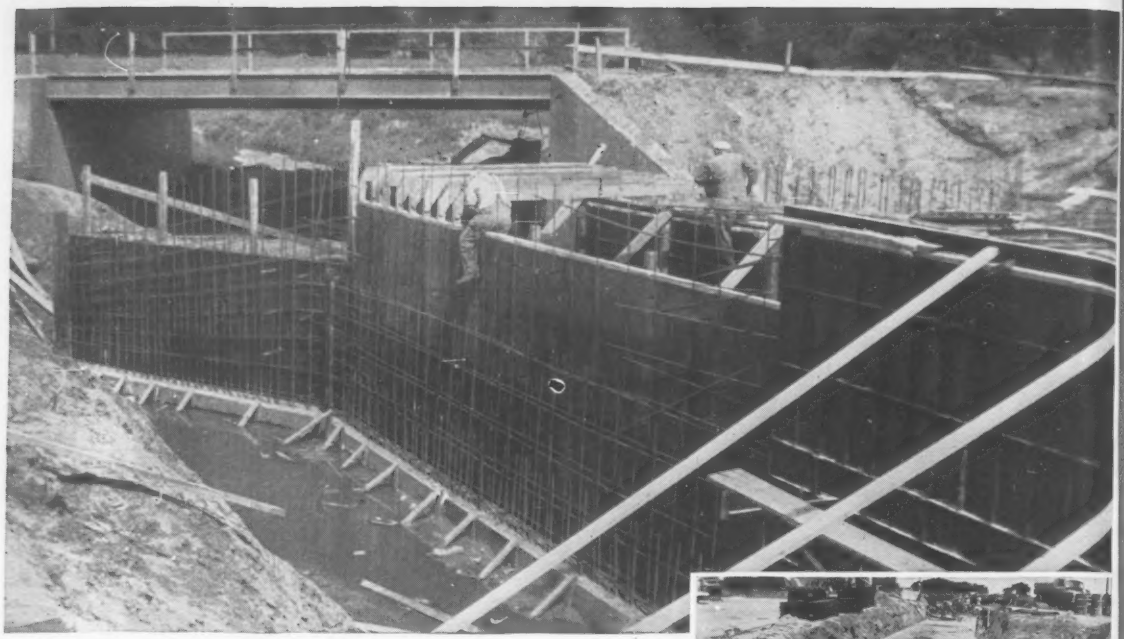

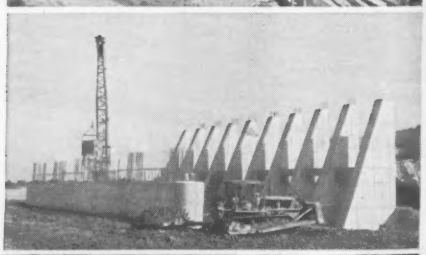

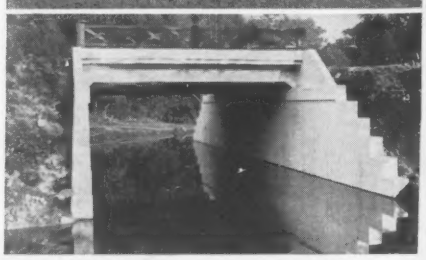

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(Continued from page 148)

Poole Constr. Co. Ltd., 10503 109 St., Edmonton, Alta., LB $128,272, Contr. 128, covering 250,000 sq. ft. one course concrete walks, EDMONTON, ALTA. City, Civic Block, Edmonton, Alta.;
Bennett & White Alberta Ltd., 11239 83 St., Edmonton, Alta., LB $102,510 Contr. 127, 200,000 sq. ft. concrete sidewalks (Edmonton, Alta.).

BRITISH COLUMBIA—B. C. Govt., Parliament Bldg., Victoria,
Poole Eng. Co. Ltd., 218W W. 12 Ave., Vancouver, B. C., CA $642,710. Contr. S-5761, bit. paving roads in Omineca West area. Awarded May 15. CD 7/21/43.

▲ BRITISH COLUMBIA—B. C. Govt., Parliament Bldgs., Victoria,
L & M Logging Ltd., Kamloops, B. C., LB $1,597,335 (7 bidders) reconstr. 12.8 mi. Trans-Canada Rd. from Craigellachie to Kay Falls and from Kay Falls to Twin Bridges. CD 5/15.

BRITISH COLUMBIA—B. C. Govt., Parliament Bldgs., Victoria,
B. C.—P. F. Law Constr. Ltd., 500 Beatty St., Vancouver B. C., LB $372,629 (9 bidders) Proj. 870, 4.11 mi. Section 1, Summit Lake-Junction Hy. No. 6, Nelson-Creston Electora District;
B. C.—Marwell Paving Co. Ltd. and Mannix & O'Sullivan Paving Co. Ltd., 1500 W. Georgia St., Vancouver, B. C., LB $238,118 (5 bidders) Contr. S-5782, bit. surf. during 1957-58 in Salmon Arm Electoral District. Bids May 16. CD 5/14.

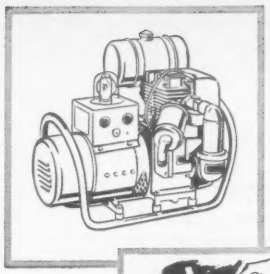
BRITISH COLUMBIA—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.,
Dawson Wade & Co. Ltd., 775 Clark St., Vancouver, B. C., LB $442,400. bit. stab. base course Trans-Canada Hy. from Mile about Mile 0 to Mile 12 in Yoho National Park, Field. Bids May 16. CD 5/8.
G. W. Ledingham & Co. Ltd., 844 S.W. Marine Dr., Vancouver, B. C., CA $100,435 (3 bidders) installing asbestos cement water mains for waterworks distr. sys., QUENSEL, B. C. City, City Hall, Quensel, B. C. Awarded May 15. CD 1/4.

MANITOBA—Manitoba Govt., Legislative Bldg., Winnipeg,
Benjamin Brothers Ltd., 865 Tache Ave., Winnipeg, Man., LB $516,600 (4 bidders) c. conc. 10.4 mi. Hy. No. 4, from Rosenfeld to Hy. No. 75, Montcalm and Rhineland. Bids Apr. 23. CD 4/18.

MANITOBA—Manitoba Govt., Legislative Bldg., Winnipeg,
Man.—Commonwealth Constr. Ltd., 300 Royal Bank Bldg., Winnipeg, Man., LB $293,800 (3 bidders) bit. plant mix surf., shoulders 20.8 mi. Trans-Canada Hy. in Municipality of North Cypress;
Man.—Widdicombe Bros., Foxwarren, Man., LB $153,910. drainage, embankment 11.4 mi. Hy. 83 from Eleven Mile Corner to San Clara;
Man.—Chennel's Constr. Co. Ltd., 1288 Portage Ave., Winnipeg, Man., LB $110,000 (only bidder) asph. base course 8.2 mi. Trans-Canada Hy. from east of Carberry to Sidney;
Man.—J. Gunia, St. Pierre, Man., LB $76,947 (6 bidders) grav. Hy. No. 2 and Hy. 18, Holland, Victoria and South Cypress.
Tidewater Constr. Co. Ltd., East River Rd., New Glasgow, N. S., LB $237,380 Alt. No. 7, breakwater repairs Mauger Beach, McNABS ISLAND, N. S. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids May 8. CD 4/15;
Cameron Contg. Ltd., Box 1557, Halifax, N. S., LB $231,100 (Alt. No. 2) breakwater repairs Mauger Beach (McNabs Island, N. S.).
▲ Canadian Bechtel Ltd., 25 King St. W., Toronto, Ont., CA Est. about $20,000,000. 141 mi. 26 in. gas pipe line from Dawn storage area near Chatham to Oakville, ONTARIO. Union Gas Co. of Canada Ltd., 48-5 St., Chatham, Ont. Awarded May 21. CD 1/25/54.
Foundation Co. of Canada Ltd., 1900 Sherbrooke St. W., Montreal, Que., CA Est. over $75,000. 600 ft. wharf addn., mainly of piling, steel, concrete, SOREL, QUE. Quebec Iron & Titanium Corp., 1625 Route Marie Victorin, Tracy, Sorel, Que. Bids Apr. 10, awarded May 16. CD 3/27.
Burns & Dutton Concrete & Constr. Co. Ltd., 5440 First St. S.W., Calgary, Alta., CA $530,852. water and sewer mains, URANIUM CITY, SASK. Uranium City and District, Uranium City, Sask. Awarded May 15. CD 11/28.

BUILDINGS—LB & CA

▲ Bennett & White Alberta, Ltd., 10239 83 St., Edmonton, Alta., CA $1,433,864, Bonnie Doon High SCHOOL, 90 Ave. and 81 St., EDMONTON, ALTA. Edmonton Public School Bd. 10733 101 St., Edmonton, Alta. Bids May 2, awarded May 16. CD 5/16, under LB.
▲ Pearson Constr. Co. Ltd., 1019 Erin St., Winnipeg, Man., CA $3,500,000. 260,000 kw THERMAL PLANT, east side of Red River, SELKIRK, MAN. Manitoba Hydro-Electric Bd., 213-219 Notre Dame Ave., Winnipeg, Man. Awarded May 16.
Adelard Jacques Ltd., 526 rue Galt O., Sherbrooke, Que., CA $700,000. 5 story, brick, stone, steel MOTHER HOUSE, 20-acre site, MONCTON N. B. Le Juvenat des Filles de Jesus, Rogerville, N. B. Awarded May 17. CD 1/28.
Con-Eng Contractors Ltd., 267 Dundas St., London, Ont., CA Est. $150,000 (2 bidders) 120x180' ft., steel, brick FACTORY, Clark Sideroad near LONDON, ONT. Canada Vulcanizer & Equipment Co. Ltd., 1109 York St., London, Ont. Awarded May 17. CD 11/19.
▲ J. P. Chenier Co. Ltd., 1057 Meriville Rd., Ottawa, Ont., CA Est. $6,000,000-$7,000,000. HOUSING, incl. 400 houses, Carling Ave., OTTAWA, ONT. Carling Realty Co. c/o contractors. Awarded May 21.
Queensview Constr. & Development Ltd., 525 Bank St., Ottawa, Ont., CA $797,252 RADIO PHYSICS LABORA-



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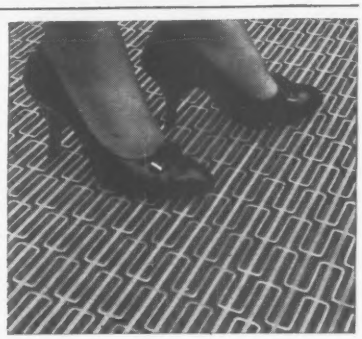

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TORY addn., OTTAWA, ONT. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Apr. 16, awarded May 17. CD 4/23, under LB.

▲ **W. B. Sullivan Constr. Ltd.**, O'Connor Postal Depot, Toronto, Ont., CA **$1,237,183** (13 bidders) CENTRAL WELFARE CENTER and new O'NEIL BATH HOUSE, George St., TORONTO, ONT. City, City Hall, Toronto, Ont. Bids Apr. 5, awarded May 17. CD 4/1, under LB.

▲ **Dunker Constr. Co. Ltd.**, 178 Louisa St., Kitchner, Ont., CA Est. **$1,000,000.** Unit 1, drive-in RESTAURANT at SHOPPING CENTER, Zehr's Mall, 16-acre site, WATERLOO, ONT. Zehr's Markets Ltd., 696 Belmont St., Kitchener, Ont. Bids Apr. 26, awarded May 21. CD 4/23.

Mandel, Inc., c/o Vasis Real Estate, realtor, 872 Bloor St. W., Toronto, Ont. Owner Builds. **$400,000.** 3½ story, 37-suite, masonry APARTMENT, Main St. N., WESTON, ONT.

ALASKA

HEAVY CONSTRUCTION—LB & CA

† **ALASKA**—Bureau P. Rds., Dpt. Commerce, Juneau, **Nygren Constr. Co.**, Lloyd Blvd., Seattle 1, Wash., LB **$391,710** (5 bidders) four- I-beam bridges totaling 560 ft. in length on steel piling, Delta River Valley on Richardson Hy., Proj. F-071-4 (2). Bids May 14. CD 4/26.

† **City Electric Service**, Fairbanks, Alaska, LB **$628,879,** (6 bidders) electrical distr. for NIKE sites, Eielson Air Force Base, Inv. 57-74, ALASKA. U. S. Eng., Anchorage, Alaska. Bids May 15.

BUILDINGS—LB & CA

▲† **Raber & Kief Beck Constructors Inc.**, 420 Queen Anne Ave., Seattle, Wash., CA **$1,100,203,** 1 story, 60x208 ft., rein.-con. LAUNDRY and DRY CLEANING PLANT at Naval Station ADAK, ALASKA. Seventeenth Naval Dist., 215 W. Harrison St., Seattle, Wash. Bids Apr. 9. CD 4/15, under LB.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **VENEZUELA**—Ministry of Public Works, Caracas, **Precomprimido**, Caracas, Venezuela, and **Julius Nerger**, Germany, CA **$98,874,000** bridge and road over outlet, Lake Maracaibo. CD 3/15, under LB.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

▲† **Merritt-Chapman & Scott Corp.**, 261 Madison Ave., and **Johnson, Drake & Piper International Corp.**, 111 4th Ave., both New York, N. Y., U.S.A., CA **$6,394,-366** addnl. buildings and construction at U. S. Goose Air Force Base, ENG-30-347-57-20, GOOSE BAY, LABRADOR. U. S. Eng., Eastern Ocean Dist., 346 Broadway, New York 13, N. Y., U.S.A. Bids Apr. 30. CD 5/3, under LB.

U. S. POSSESSIONS

BUILDINGS—LB & CA

▲ **Hawaiian Dredging Constr. Co.**, Honolulu, Hawaii, CA Est. **$5,000,000.** 14 story OFFICE, 1441 Kapiolani St. HONOLULU, HAWAII. Hawaiian Land Co., Honolulu, Hawaii. John Graham & Co., 1426 5 St., Seattle, Wash., archts.

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PROPOSED PROJECTS

WATER SUPPLY

Ark., Pine Bluff—Pine Bluff Water Co., J. Richard Pierce, pres., WW plant, 29th and Myrtle, incl. two 1,500,000 gpd filters, two 1,500,000 gpd wells, 1 m.g. underground covered storage reservoir, etc. **$657,000.** CD 10/28/49.

▲ **Calif., Benicia**—City, c/o Clerk, City Hall, defeated bonds May 14, purchase and expansion of California-Pacific Water VO Domestic Facilities Sys. **$1,200,-000.** CD 4/30.

CONNECTICUT—New Haven Water Co., 100 Crown St., New Haven,
raising Chamberlain Dam to provide addnl. storage, Bethany, **$150,000.**
cleaning and lining approx. 9,000 ft. 10 in. main and installing approx. 5,000 ft. 8 in. main in Montowese Ave., Indian Neck Area, Branford, **$48,000;**
duplicate chlorination facilities with ton-retainer installation for both original and duplicate facilities, Lake Gaillad; 16-in. main through dam as independent supply for North Brandford, **$50,000;**
balancing reservoir to serve North Haven Area, North Haven, **$120,000;**
addnl. water supply to Stony Creek by constr. standpipe or elevated storage incl. 6,000 ft. 12 in. main in Stony Creek Rd., Stony Creek, **$175,000;**
second standpipe on Shingle Hill of 2 m.g. capacity and change Shingle Hill pumping station, West Haven, **$200,000;**
new concrete paving, etc., at Lake Dawson Dam, imprv. increasing capacity of Ross Pump installation Woodbridge, **$44,000.**

Mo., Pleasant Hill—City, City Hall, voted $143,000 bonds May 14, water sys. imprvs. and exten.

Mo., Seneca—City, H. N. Harrison, clk., voted bonds May 7, water sys. imprvs., incl. constr. elevated storage tank, digging new well and expan., exten. lines in system. **$115,000.**

O., Clinton—Village, Village Hall, water and sewerage systems. **$200,000.**

O., Fairport—City, City Hall, extending WW intake line 2,000 ft. out into Lake Erie or constr. new line. **$200,000.**

O., Newton Falls—Village, Village Hall, WW plant. **$362,000.**

O., Steubenville—City, City Hall, underground storage water reservoir to serve south end of city **$276,000;** 250,000 gal. water tank to serve St. John's Hospital and surrounding area, **$108,000;** 400,000 gal. water storage tank to serve the housing project and surround area, **$127,900;** 20 in. c.i. water main to imprv. water supply in downtown area, **$101,000;** addnl. water pumping facilities at pumping station **$100,000;** distr. sys. and water program to lower operating costs, reducing unaccounted for water and imprv. operating income for waterworks dpt. **$300,000.** Pride Eng. Co., 110 W. Shaw Pl., Pittsburgh, Pa., consult. engrs. CD 10/17/51.

Tex., Canyon—City, City Hall, elevated steel water storage, **$50,000;** 3 water supply wells, **$75,000;** 12- to 16-in. water line and 2 mi. 8 in. water gathering lines, **$375,000.** McMorries & Assocs., 527 Amarillo Bldg., Amarillo, consult. engrs.

Tex., Mission—Hidalgo Co., Courthouse, Edinburg, relocate river pumping plants supplying water for Mission and surrounding areas. **$327,000.**

Tex., Perryton—City, City Hall, WW, storage, etc. **$205,-000.**

Tex., San Augustine—City, City Hall, WW. **$205,000.**

Wyo., Casper—City, City-County Bldg., voted $575,000 bonds May 14, enlarging city water sys. CD 5/8.

SEWERS, WASTE DISPOSAL

▲ **Ala., Birmingham**—City, City Hall, remodeling sanitary sewerage sys. **$2,000,000.** Harry H. Hendon & Assoc., Stallings Bldg., Birmingham, consult engrs. CD 12/22/53.

Ark., Benton—Arkansas State Hospital, c/o Supt., sewage treatment facilities for Benton unit of Arkansas State Hospital. **$100,000.** Marion L. Crist & Assocs., Inc., Union Life Bldg., Little Rock, consult. engr.

▲ **Ark., Fayetteville**—City, City Hall, constr. sewer extensions and sewage treatment facilities, **$1,300,-000.** Marion L. Crist & Assocs., Inc., Union Life Bldg., Little Rock, consult. engr.

Ark., McGehee—City, City Hall, constr. sewer extension and sewage treatment facilities. **$350,000.** Marion L. Crist & Assocs., Inc., Union Life Bldg., Little Rock, consult. engr.

▲ **Calif., Santa Barbara**—City Council, City Hall, interceptor sewers, **$1,450,000.** Santa Barbara Engineers, Inc., Engineering Service Corp., 1127 W. Washington Blvd., Los Angeles, consult. engrs. CD 8/21.

Conn., Hartford—Metropolitan Dist., 115 Broad St., sanitary sewers, pumping station and force main in Beatrice Ave., Blue Hills Ave. Exten., Joyce and Packard Sts., Bloomfield, $183,050; trunk and local sanitary sewers in Silas Dane Hy. from vicinity of Marshall Rd. to Parsonage Rd., Rocky Hill, $105,014; trunk and local sanitary sewers in Silas Dane Hy. and Hewitt St. from vicinity Marshall Rd., Rocky Hill to Maple St., Wethersfield, $155,289. Warren N. Gentner, ch. engr.

▲ Mo., Joplin—City, City Hall, voted $1,450,000 bonds May 14, sewerage sys. imprvs., extens., incl. enlargement of two sewage treatment plants and exten. main sewers to various parts of city, Allgeier, Martin & Assocs., 1204 Main St. and P. O. Box 0, Station A, consult. engrs.

▲ Mo., Raytown—City, City Hall, dcfeated $3,200,000 bonds May 14, sewerage sys.

Mont., Deer Lodge—City, City Hall, sewage treatment plant. $168,000. Wenzel & Co., Country Club Bldg., Great Falls, consult. engrs.

N. J., Fanwood—Borough of Fanwood, storm sewerage system. $250,000. Edgar Lewis, 917 West Front St., Plainfield, consult. engr.

▲ N. J., South Plainfield—South Plainfield Sewer Auth., Municipal Bldg., sewer in eight districts to connect with Plainfield trunk sewer. $2,800,000. Bowe Albertson, 75 West St., New York, N. Y., consult. engr.

O., Maple Heights—City, City Hall, outlet pipes to carry sewage under Pennsylvania R.R. tracks, $200,000. Willard F. Schade & Assoc., Chester-12th Bldg., Cleveland, Zone 14, consult. engrs.

O., Maple Heights—City, City Hall, 60 in. storm sewer extending to area south of Woodbrook Rd. to Turney and Corkhill Rds. $450,000. Willard F. Schade & Assoc., Chester-12th Bldg., Cleveland, Zone 14, consult. engrs. CD 10/10/52.

▲ O., Mingo Junction—Village, Village Hall, sewage disposal system. $1,124,000.

O., Toronto—City, City Hall, sewage disposal sys. Over $700,000. Willard F. Schade & Assoc., Chester-12th Bldg., Cleveland, Zone 14, consult. engrs. CD 12/6.

Okla., Cushing—City, City Hall, bond election June 25, sewage disposal plant. $480,000. W. C. Albright, city engr. CD 3/12.

Tex., Baytown—Elmer Gray & Son and Truman Cox, Baytown, sanitary sewers, $77,500; storm sewers, $75,000, 165-acre tract in NE Baytown.

Tex., Dallas—Fox & Jacobs Constr. Co., Inc., 2714 McKinney St., storm sewers $75,000; sanitary sewers, $77,500, "Flair" Homes zone.

Tex., Dallas—Windsor Properties, Inc., c/o W. C. Windsor, Jr., Mercantile Commerce Bldg., Dallas, addnl. sanitary sewers, $81,000; addnl. storm sewers $77,150, in "Brook Hollow" Industrial Dist.

Tex., Grand Prairie—City, City Hall, sanitary sewers $77,000; storm sewers, $75,000, South Dalworth area. CD 2/15/55.

Tex., Houston—Krist Hubert & Assocs., 5107 Jackwood St., sanitary sewers $75,000; open and closed drainage $75,000, Maplewood addn.

Tex., Houston—Utilities Service Co., c/o City Council, (Private Co.) sewer lines from meat packing area to connection with city sewers. $200,000.

Tex., Lampasas—City, City Hall, drainage, because of flood damage. $100,000.

Tex., Perryton—City, City Hall, sanitary sewers. $145,000.

Tex., San Augustine—City, City Hall, storm sewers, $90,000; sanitary sewers, $150,000. CD 8/18/50 .

Wash., Seattle—City, County-City Bldg., Zone 4, sewers in area near Beacon Ave. and Cloverdale St. $114,670.

▲ Wyo., Casper—City, City & County Bldg., voted bonds May 14, sewage oxidation pond, $1,338,475. Robert L. Streeter, P. O. Box 2019, const. engr. CD 5/8.

BRIDGES

N. J., Trenton—Mercer Co., Court House, Bridge 2302 over Stony Brook, Hopewell-Woodsville Rd., Hopewell, $96,000; reconstr. bridge over Stony Brook, Hopewell-Woodsville Rd., Hopewell, $78,000. Edward L. Mount, Court House, co. engr.

Ont., London—City Council, Ray Dennis, mayor, 3 span 230 ft., rein.-con.. bridge with sidewalks on each side, 30 ft. roadway. $200,000. S. G. Chipman Co. Ltd., 234 Queens Ave., consult. engrs. Eric Skelton, City Hall, city engr.

YUKON TERRITORY—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.,
Whitehorse—reconstr. bridge over Mayo River on Whitehorse-Mayo Rd. $190,000.

STREETS AND ROADS

▲ Calif., San Jose—Santa Clara Co., c/o Engineer, 1st and Rosa Sts., exten. county road sys. to serve Coe Park Area. $2,000,000. CD 9/21/44.

Me., Presque Isle—City, Hy. Dpt., 68 Blake St., paving and drainage, North and Church Sts. $100,000. Fay, Spofford & Thorndike, 11 Beacon St., Boston, Mass., consult. engrs.

O., Cincinnati—Bernard Naber, 5547 Cheviot Rd., constr. streets, sewer, water lines for new subdivision off West Fork Rd. $100,000. Edw. Niemeier, 3818 N. Bend Rd., consult. engrs.

O., Elyria—Comrs. Lorain Co., Court House, surf. tr. 40 mi. county highways. $189,000. Don E. Patterson, co. engr.

▲ Tex., Boston—Bowie Co., co Precinct No. 1, Courthouse, road work. $1,000,000.

Tex., Dallas—Windsor Properties, Inc., c/o W. C. Windsor, Jr., Mercantile Commerce Bldg., Dallas, developers, addnl. permanent type street paving in Brook Hollow Industrial Dist. $133,350.

Tex., Lampasas—City, City Hall, street reconstr., reworking. $100,000.

▲ NEWFOUNDLAND—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.

St. John's—clearing, grading, base course Trans-Canada Hy. in Terra Nova National Park. $2,000,000;
reconstr. main entrance road, Signal Hill, Terra Nova National Park. $100,000. CD 10/4/49.

▲ NORTHWEST TERRITORIES—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.

Yellowknife—exten. MacKenzie Hy. to Yellowknife via Mills Lake and Fort Rae. $2,641,700.

PRINCE EDWARD ISLAND—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.

Stanhope Beach—Gulf Shore Rd. and completing bridge. Prince Edward Island National Park. $700,000.

EARTHWORK, WATERWAYS

Tex., Midland—Cities Service Oil Co., c/o M. Esperson Bldg., Houston, underground storage cavity, products to come from gasoline plant. $300,000.

AIRPORTS

† Fla., Milton—HOUSING—Dist. P. Wks. Officer, 65th Naval Dist., Bldg. 13, U. S. Naval Base, Charleston, S. C., plans by Joseph H. Bryson, archt.-consult. engr., 301-03 Greenleaf Annex, Jacksonville, Capehart housing, Auxiliary Air Station, Whiting Field.

Mass., Lawrence—ADMINISTRATION BLDG., etc.—City, Lawrence Airport Comn., City Hall, 1 story, 4,000 sq. ft. administration bldg. $80,000, Francis T. Fox, 1 Chesterfield Rd., Worcester, airport planner, and runway exten., $75,000, at Richard F. Condon Airport, North Andover. Joseph L. Paley, 105 Newbury St., Boston, consult. engr. both projects.

Mass., Plymouth—AIRPORT—Town Airport Comn., Town Hall, airport imprvs., incl. landing strip and runway extens. $110,000. Fay Spofford & Thorndike, 11 Beacon St., Boston, consult. engrs.

O., Toledo—PAVING—Ohio Adjustant General, Ohio Air National Guard, 530 Buckingham St., Columbus, paving 1,000 ft. overrun at Toledo Express Airport. $150,000.

† S. C., Beaufort—OFF-SITE UTILITIES—P. Wks. Office, Dpt. Navy, Naval Base, plans by Reid Hearn &

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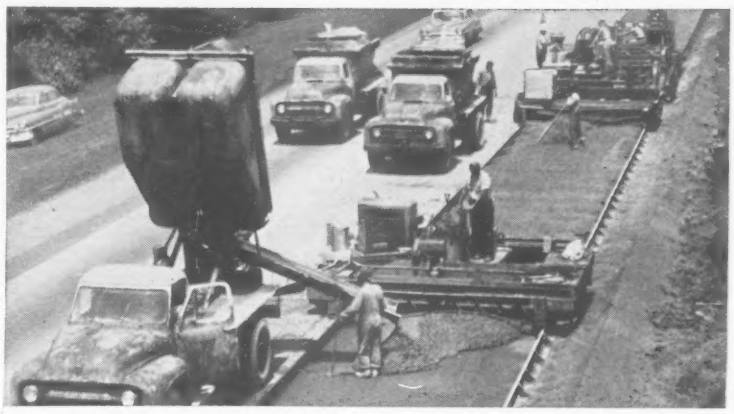

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CITY_____ ZONE___ STATE____

Assocs., archts-consult. engrs, 600 Beltine Blvd., Columbia, off site support utilities from Capehart Housing Proj., Marine Corps Auxiliary Air Station. CD 8/28.

† **Wash., Neah Bay**—HOUSING—Purch. & Constr. Office, 337th Fighter Group, Portland AFB, Portland, Ore., 27 housing units at Air Force Station. $300,000. Bids to be called next month. CD 4/26.

▲ **Wash., Seattle**—HANGAR—Northwest Airlines, Rand Tower, Minneapolis, Minn., hangar addn. at Seattle-Tacoma International Airport. $2,000,000. Planned for completion by 1960.

LATIN AMERICA

▲ **Cuba, Havanna**—OIL REFINERY—Copetrol Oil Refining Co., Havanna, plans 10 to 15,000 bbls. daily oil refinery. $6,000,000. Greb & Doremus Processing Co., 4601 Stanford St., Houston, Tex., U. S. A., consult. engrs.

▲ **Mexico, Puerto Bahia de Paredon**—SEA PORT—Sria de Marina, Mexico City, plans sea port. $4,000,000.

▲ **Mexico, Tampico**—Sria. de Marina, Mexico City, plans reconditioning breakwaters. $1,600,000.

PUBLIC BUILDINGS

Ark., Hot Springs—SCHOOL—Bd. Educ., Hot Springs, plans by Ginocchio, Cromwell & Assocs., 416 Center St., Little Rock, Junior High School. $850,000.

▲ **Calif., Bakersfield**—SCHOOL—Kern County Union High School & Junior College Dist., Bakersfield, plans by Alford, Thomas & Leydenfrost, 602 Haberfelde Bldg., 61,800 sq. ft., concrete block Burroughs High School, Indian Wells Valley. $1,500,000. CD 2/6/53.

▲ **Calif., Campbell**—SCHOOLS—Cambrian Elementary School Dist., c/o Supt., 481 E. Casey Rd., voted bonds May 17 purchase and constr. 2 schools. $1,450,000. CD 3/8.

▲ **Calif., Chico**—STUDENT HOUSING—State Div. Architecture, P. Wks. Bldg., 1120 N. St., Sacramento, student housing at Chico State College. $1,589,240.

▲ **Calif., Daly City**—SCHOOL—Jefferson Union High School Dist., 6996 Mission St., voted bonds May 17, 2 high school zones at Sharp Park and one for Linda Mar Subdivision in Pedro Valley and to complete existing Westmore High School. $2,900,000. CD 3/5.

Calif., Davis—ANIMAL HUSBANDRY—Bd. Regents University of California, Administration Bldg., plans by Albert Hunter, Ashby Ave. and 7th St., Berkley. 30,000 sq. ft. steel frame, slab floor aluminum exterior, animal husbandry bldg. $350,000.

▲ **Calif., Fresno**—STUDENT HOUSING—State Div. Architecture, Pub. Wks. Bldg., 1120 N. St. Sacramento, student housing at Fresno State College. $2,296,300.

Calif., Huntington Beach—SCHOOL—Ocean View Elementary School Dist., plans by Frick & Frick, 340 N. Altadena Dr., Pasadena, 12-classroom frame, stucco, concrete slab elementary school. $400,000.

▲ **Calif., Sacramento**—STUDENT HOUSING—State Div. Architecture, Pub. Wks. Bldg., 1120 N. St., student housing at Sacramento State College. $2,296,300.

▲ **Calif., San Bruno**—SCHOOL—San Bruno Park Elementary Schools, c/o Supt., 500 Acacia Ave., voted bonds May 17, Crestmoor School, $2,000,000. Ernest Kump & Assocs., 450 Ramona St., Palo Alto, archts. CD 3/8.

▲ **Calif., San Rafael**—SCHOOLS—San Rafael Unified School Dist., c/o Supt., San Rafael, voted bonds May 17, school at Santa Venetia, addns. to Coleman, Hartzell, San Pedro, West End, Santa Venitia, Davidson and Sun Valley Schools. $1,300,000. CD 3/27.

▲ **Calif., Saratoga**—SCHOOLS—Saratoga Elementary School Dist., c/o Supt., P. O. Box 247, voted bonds May 17, constr. 2 schools. $1,000,000. CD 3/4.

Calif., South San Francisco—SCHOOL—South San Francisco Unified School Dist., c/o Supt. 398 B St., bond election Oct. 1, high school, $400,000.

Colo., Canon City—COMMUNITY, etc.—City, City Hall, bond election July 30, 1 story, 266x278 ft. community bldg. and 35x75 ft. swimming pool. $750,000. S. Arthur Axtens, Farmers Union Bldg., Denver, consult. engr.-archt.

Conn., Meriden—HOSPITAL—Meriden Memorial Hospital, Paddock Ave. Plans by Douglas Orr, 111 Whitney Ave., New Haven, 2 story, 50-bed hospital addn. $450,000.

Conn., Middletown—SCHOOL—Town, Town Hall, plans by Seb J. Passanesi, 164 Court St., Bertrand E. Spencer School addn., Westfield St. $400,000. CD 4/4.

Conn., Milford—SCHOOL—Town, Town Hall, elementary school, Fresh Meadow Lane. $500,000.

▲ **Conn., New Haven**—HOUSING—New Haven Housing Auth., 195 Church St., plans by Pederson & Tilney, 111 Whitney Ave., 26 buildings, incl. 154 Unit moderate rental housing, Eastern St. $2,420,000. Jerome F. Mueller, 51 Lewis St., Hartford, consult. engr. Charles C. Cahn, 82 Audubon St., engr. CD 5/9.

▲ **Conn., Putnam**—HOUSING—Putnam Housing Auth., City Hall, plans by Arthur E. Thomas, 28 Shetucket St., Norwich, 124-unit housing. $1,741,176. CD 8/31.

Del., Claymont—SCHOOL—Claymont Special School Dist., Claymont, plans by Massena & DuPont, 704 Delaware Ave., Wilmington, Claymont School, Science Bldg. addn. $400,000. CD 2/28/56.

Fla., Miami—SCHOOLS—Dade Co. Bd. P. Instruction, 275 N. W. 2 St., plans by Clark, Knight & Craft, 1427 Ponce De Leon Blvd., Coral Gables, 1 story, concrete block elementary school Ludlum Rd. and W. 59 Place, Hialeah, $400,000; 1 story, concrete block elementary school Ludlum Rd. and Sunset Dr., South Miami, $400,000. CD 11/3/55.

▲ **Idaho, Moscow**—STUDENT UNION—University of Idaho, plans by Dropping, Kelley & Finch, and Wayland & Cline, Idaho Bldg., Boise, student union bldg. addn. $1,000,000. CD 3/29.

Ind., Peru—SCHOOL—Pike Creek Twp., c/o Fred Plothow, trustee, R.R., Peru, plans by Maurer & Maurer, consult. engrs.-archts., 312 Lafayette Blvd., South Bend, 1 story, T-shaped, 217x312 ft., masonry steel elementary school, near Bunker Hill, $500,000. CD 3/1.

Kan., Belleville—HOSPITAL—Republic County Hospital Com., Court House, plans by Anderson, Srach, Johnson & McClung, 137½ S. Santa Fe. St., Salinas, county hospital, $350,000.

Ky., Somerset—HOSPITAL—City, City Hall, hospital addn. $750,000. Howard & Thomas McClorey, 3002 Woodburn St., Cincinnati, O., archts. and engrs.

▲† **Md., Bethesda**—LIBRARY—General Services Admin., P. Bldgs. Service, General Services Bldg., 19 and F Sts. N. W., Wash. 25, D. C., plans by O'Connor & Kilham, 101 Park Ave., New York, N. Y. national library of medicine. $10,000,000 (No appropriation).

▲ **Mass., Boston**—SCHOOL—City, Mayor's Office, City Hall, school to replace present Lowell School and Wyman School, Jamaica Plain. $1,000,000. Constr. in 1958. CD 1/28/53.

Mass., Chicopee—SCHOOL—City, c/o School Dpt., John L. Fitzpatrick, supt., 135 Grape St., plans by Henry J. Tessier, 226 Dwight St., Springfield, Fairview Elementary School. $600,000.

Mass., Halifax—SCHOOL—Town, Chairman Bldg. Comn., c/o Supt. Schools, plans by John W. Priestley, Jr., 131 State St., Boston, 12 classroom, masonry, elementary school, $350,000. Bids early in July.

Mass., Pittsfield—HOSPITAL—Pittsfield General Hospital, 741 North St., plans by Marcus & Nocke, 251 Columbus Ave., Boston, hospital addn., alterations, North St. $350,000.

▲ **Mich., Ecorse**—HOUSING—Ecorse Housing Comn., Robert F. Johnson, dir., plans by Arthur Grieg & Assocs., 10538 W. Jefferson Ave., River Rouge, William W. Voisne Terraces, 100 brick housing unit, Salliotte, Visger, Eighth St. locations. $1,441,562. CD 7/30.

▲ **Mich., Hazel Park**—SCHOOL, etc. City, Bd. Educ., 22750 Highland St., plans by Jahr, Anderson, Machilda Assocs., Inc., 15011 Michigan Ave., Dearborn, high school and swimming pool, Hughes and Felker St. $4,000,000. CD 12/19.

† **Mich., Jackson**—ARMY TRAINING CENTER—U. S. Eng., 600 E. Jefferson St., Detroit, Zone 26, army reserve training center, $500,000.

▲ **Mich., Lincoln Park**—SCHOOLS, etc.—Bd. Educ., 1300 Champlain St., Lincoln Park, bond election June 27, schools, incl. high school, auditorium, swimming pool, etc. $6,800,000.

▲ **Minn., Faribault**—HOSPITAL—First Hospital District of Rice Co., J. King, chn. Bd. County Comrs., plans by Magney, Tisler & Setter, 303 Roanoke Bldg., Minneapolis, hospital bldg. $1,200,000.

Mo., Pleasant Hill—SCHOOL—Bd. Educ., C. E. Ragner, supt., voted $354,000 bonds May 14, high school, about 15 mi. northeast of Harrisonville, Mathews & Killman, 715 S. Glenstone St., Springfield, archts. CD 5/16.

Mo., St. Louis—COMMUNITY CENTER—city, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12th Blvd. and Market St., community center in Sherman Park on Kingshighway blvd. north of Easton Ave., incl. indoor and outdoor swimming pools, gymnasium, craft and game areas and meeting room, etc. $810,000. CD 4/26/43.

N. J., Camden—SCHOOL—Bd. Educ., City Hall, plans by Alfred Clauss, 1810 Rittenhouse Sq., Phila., Pa., Woodrow Wilson High School addns., alterations, incl. gym. and classrooms, $344,000; Camden Senior High School addns., alterations, $344,000. Bids soon, Bellante & Clauss, 1810 Rittenhouse Sq., Phila., Pa., consult. engrs. CD 8/24.

▲ **N. J., East Orange**—SCHOOL—Bd. Educ., plans by Emil Schmidlin, Central Ave., renovations (new) north wing to Elmwood School. $1,500,000. Constr. 1958.

▲ **N. J., Edison**—SCHOOL—Bd. Educ. Edison Twp. plans by Alexander Merchant, 1 Elm Row, New Brunswick, elementary school, the Oak Tree section of the Township, $500,000; Junior High School of Township, $1,500,000.

N. J., Haddonfield—ARMORY, etc.—N. J. Dpt. Defense, Armory Dr., Trenton, plans by Edwards & Green, 17 S. 15 St., Camden, armory and motor vehicle storage. $650,000. Bids soon. CD 4/26.

N. J., Hightstown—SCHOOL—Bd. Educ. plans by Micklewright & Mountford, E. Stuyvesant Ave. and Prospect St., Trenton high school addn. $450,000.

N. J., Lakewood—SCHOOL—Lakewood Twp. Bd. Educ., elementary school. $500,000.

N. J., Toms River—HEADQUARTERS—N. J. Division Purchases & Property, State House, Trenton, plans by William Cramer, N. J. Bureau Architects, State House, Trenton, motor vehicle inspection headquarters. $640,000.

New York—FIRE HOUSE, etc.—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, fire house for Engine Co. and Ladder Co. vicinity of Richmond Rd. and Rockland Ave. Richmond Boro, Proj. F-32, for Fire Dept. $345,000. To go ahead in 1959.

New York—FIRE HOUSE—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, fire house for Engine & Ladder Co., vicinity of Richmond Ave. & Victory Blvd. Richmond Boro, Proj. F-31, for Fire Dpt., $345,000. To go ahead in 1961.

▲ **N. Y., Amherst**—SCHOOLS—Amherst School Bd., 4301 Main St., bond election June 22, Junior High 000. Wm. C. Lurkey, 97 Main St., Buffalo archt. CD 3/4.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City, P. S. 213 Hegeman Ave. between Vermont St. and New Jersey Ave. Proj E-416, $1,620,000. To go ahead after 1957.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City, P. S. 274, Carnasie Ave., Proj. E-799, $2,100,000. To go ahead in 1959.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City, Proj E-388, P. S. 297, Park and Marcy Aves. $2,910,000. To go ahead in 1958.

▲ **N. Y., Brooklyn** — SCHOOL — Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-414, P. S. 299, Macon St. and Patchen Ave. $2,610,000.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-842, JUNIOR HIGH SCHOOL 50, South 3 St. and Driggs Ave. $2,670,000. To go ahead in 1957.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-367, Junior HIGH SCHOOL 148, Ellery St. and Delmonico Pl. $1,450,000. To go ahead in 1958.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-915, Junior High School 265, Park Ave. and North Oxford St. $3,957,000. To go ahead in 1958.

▲ **N. Y., Brooklyn** — SCHOOL — Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj E-399, Junior High School 296, Evergreen Ave., Elder and Covert St. $4,100,000. To go ahead in 1957.

N. Y., Brooklyn—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-368, George Washington Vocational High School, Tillary, Bridge and Lawrence Sts. $4,250,000.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-387, P. S. 11, Washington and Greene Aves. (formerly P. S. 294). $2,740,000. To go ahead in 1958.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-429, P. S. 24, Bushwick Ave., Avion Pl. and Belvidere St. $2,830,000. To go ahead after 1957.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-384, P. S. 46, Park and Vanderbilt Aves. $2,910,000.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-430, P. S. 74, Bushwick Ave., Kosciusko St. and DeKalb Ave. $2,900,000. To go ahead after 1957.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-574, P. S. 142, Henry and Rapelye Sts. $2,150,000. To go ahead in 1958.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-109, P. S. 256, Tompkins Park. $2,910,000. To go ahead in 1958.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-759, P. S. 279, Canarsie Area. $2,450,000. To go ahead in 1960.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-361, P. S. 289, Kingston Ave. annd Prospect Pl. $2,505,000. To go ahead in 1958.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-421, P. S. 290, East New York Ave. $2,500,000. To go ahead in 1958.

N. Y., Brooklyn—FIRE HOUSE—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, fire house for Engine Co. 202 and Ladder Co. 101, vicinity of Van Brunt and Seabring Sts., Proj. F-34, for Fire Dpt. $345,000. To go ahead in 1957.

▲ **N. Y., Farmingdale**—SCHOOLS—Bd. Educ., Farmingdale, defeated bonds May 18, 2,400 pupil high school, $6,600,000; high school addn. $1,385,000; East Farmingdale Elementary School addn. $885,000; Woodward Parkway Elementary School addn. $395,000. CD 3/11.

N. Y., Jamaica—FIRE HOUSE—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, fire house for Engine Co. 298 and Ladder Co. 127 and Battalion Chief, vicinity of Hillside Ave. 87 Rd., near 161 St., Proj. F-41, for Fire Dpt. $455,000. To go ahead in 1958.

N. Y., Maspeth—HEALTH CENTER—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Proj. HL-13, Maspeth-Fores Hills District Health Center, Mount Olivet Crescent and Fresh Pond Rd., for Dpt. Health, $624,000. To go ahead in 1960.

N. Y., Newburgh—SCHOOL—Bd. Educ., Newburgh, plans by Perkins & Will, 7-11 S. Broadway, White Plains, New Washington St. Elementary School. $600,000. Bonds approved on May 7, bids about end of June.

N. Y., New Rochelle—SCHOOLS—Bd. Educ., New Rochelle, referendum approved, Mayflower School, North Ave. $590,000. All others defeated. CD 2/19.

(Continued on page 160)

THE BUFFALO-SPRINGFIELD K-45 KOMPACTOR

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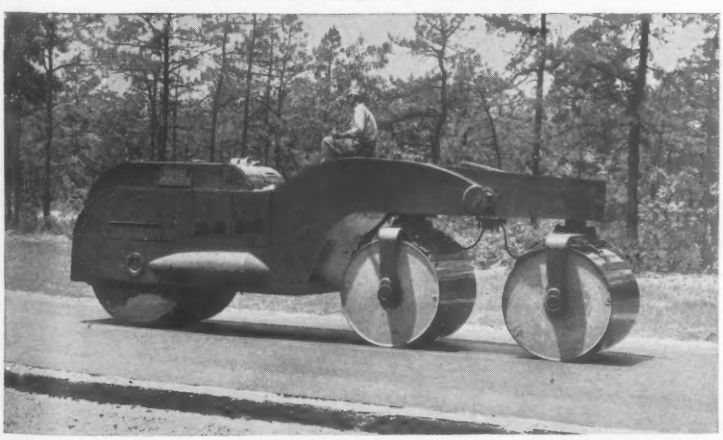

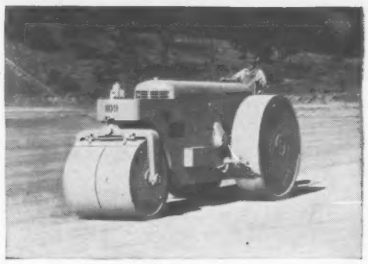

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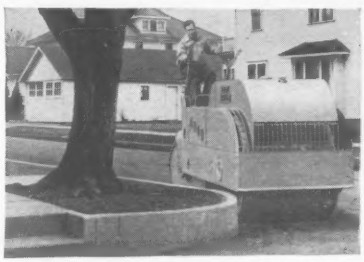

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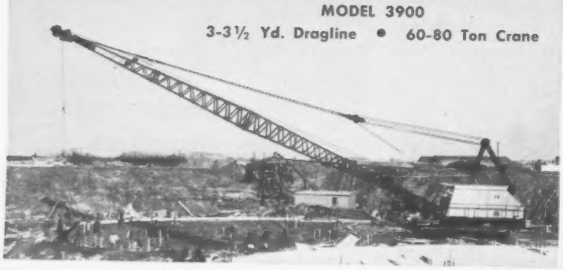

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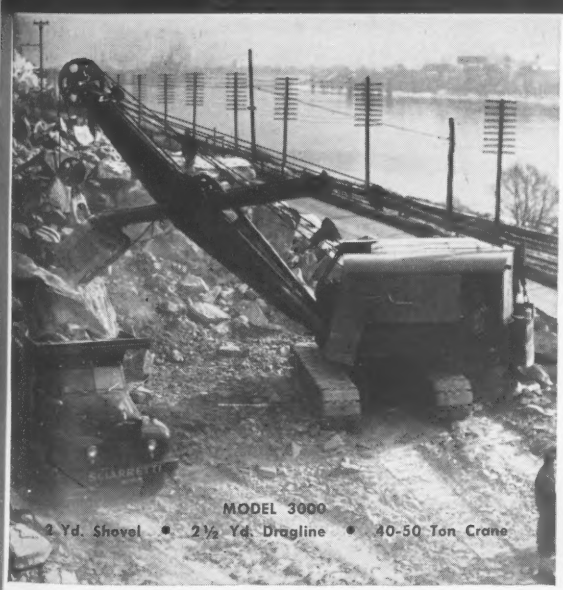

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MODEL 1600
1 Yd. Shovel & Trench Hoe • 1¼ Yd. Dragline • 20 Ton Crane

(Continued from page 156)

▲ **N. Y., New York**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, P.S. 48, vicinity of 88 St. and First Ave., Proj. E-356 $3,100,000. To go ahead in 1958.

▲ **N. Y., New York**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, P.S. 181, vicinity of Allen and Rivington Sts., Proj. E-428, $2,700,000. To go ahead in 1958.

▲ **N. Y., New York**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Junior High School 13, Madison Ave. and E. 106 St., Proj. E-358, $5,041,000. To go ahead in 1958.

▲ **N. Y., New York**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Junior High School 70, Chelsea Area, Proj. E-425, $5,350,000. To go ahead after 1957.

▲ **N. Y., New York** — SCHOOL — Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-774, P. S. 132, vicinity of Washington Ave. and E. 168 St. $2,810,000. To go ahead in 1958.

▲ **N. Y., New York**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-409, P. S. 152, Clason Point area, $2,610,000. To go ahead in 1958.

▲ **N. Y., New York**—SCHOOL—Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-404, P. S. 150, vicinity of Tiffany and 165 Sts. $2,910,000. To go ahead in 1958.

▲ **N. Y., New York**—WORKHOUSE—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Proj. C-76 city of New York Workhouse on Harts Island, for Dpt. Correction. $7,840,000. To go ahead after 1962.

▲† **N. Y., New York**—POST OFFICE, etc.—General Services Admin., P. Bldg. Service, General Services Bldg., Wash., D. C., General Post Office alterations at 8 Ave. and 33 St. and Grand Central Postal Station. $5,600,000-$6,000,000. Bids in July.

▲ **O., Columbus**—HOUSING—Ohio Dpt. P. Wks., State Dpts. Bldg., plans by Tully & Hobbs, 582 Oak St., first section marreid students housing at Ohio State University. $2,033,093. CD 11/19.

O., Dayton—OFFICE—Ohio Dpt. P. Wks., State Dpts. Bldg., Columbus, branch office bldg for Bureau of Unemployment Compensation. $520,000.

O., Elyria — SCHOOL — Ridgeville Bd. Educ., Elyria, defeated bonds May 7, school. $530,000. Charles Barber, 222½ Huron St., Toledo, archt. CD 1/24.

▲ **O., Massillon**—SCHOOL—Tuslaw District Bd. Educ., Masillon, defeated bonds May 7, high school. $1,021,000. CD 1/24.

▲ **O., Mount Healthy**—SCHOOL—Mount Healthy City School Dist., Mt. Healthy, bond election June 11, school, existing school addns., alterations. $1,000,000.

O., Versailles—SCHOOL—Bd. Educ., Versailles bond election Nov. 5, high school addn. $350,000.

O., Youngstown—OFFICES—Ohio Dpt. P. Wks., State Dpts. Bldg., Columbus, branch offices of Ohio Bureau of Unemployment Compensation. $525,000.

Okla., Shawnee—GYMNASIUM—Bd. Educ., Shawnee, gymnasium. $450,000. Constr. 1958.

▲ **Pa., Phila.**—SCHOOL—Dpt. Procurement, City Hall Annex, plans by Heacock & Platt, 1505 Race St., Roxborough High School addn. $1,750,000. CD 7/11.

† **Pa., Phoenixville**—HOSPITAL—U. S. Eng., 2635 Abbottsford Rd., Phila., plans by Walker-Yeomans Assoc., 1831 Chestnut St., Phila., Valley Forge Army Hospital alterations. $344,000.

▲ **R. I., Kingston** — SCIENCE LABORATORY — State R. I. & Prov. Plants, Div. Purchase, State House, Providence, plans by Fraser & Henthorne, 49 Westminster St., Providence, agricultural science laboratory, University of Rhode Island. $1,000,000. CD 8/28/51.

S. C., Columbia—LIBRARY—University of South Carolina, Columbia, library bldg. $700,000.

▲ **Tex., Austin**—COURTHOUSE—Travis Co., c/o Tom E. Johnson, co. judge, plans by C. H. Page & Son, P. O. Box 396, Austin. 3 story addn. to north and south wings and 2nd story wing on west side courthouse, incl. air conditioning, $1,500,000. Zumwalt & Vinther, 929 Merc. Securities Bldg., Dallas, and Wilson & Cottingham, Brown Bldg., consult engrs.

▲ **Tex., Austin**—ENGINEERING—University of Texas, c/o LeRoy Jeffers, chn. Bd. Regents, c/o Admin. bldg., plans by Jessen, Jessen, Millhouse & Greeven, 2816 Hemphill Park, Austin, and Page, Southerland & Page, consult. archt., 602 West Ave., engineering bldg. $1,550,000. CD 5/22.

Tex., Austin—POWER PLANT—University of Texas, c/o LeRoy Jeffers, chmn. Bd. of Regents, plans by Fehr & Granger, 502 E. 5th St., and Page, Southerland, & Page, 602 W. Ave., Austin, Tex., power plant addn. $250,000. CD 11/10/52.

▲ **Tex., Corsicana** — SCHOOL — Corsicana Independent School Dist., c/o Robert Ashworth, supt., voted bonds May 8, constr. Junior High School and Elementary School, incl. school addns. $1,175,000. Preston M. Gerren, 1607 Fort Worth National Bldg., Fort Worth, archt. CD 3/7.

Tex., Daingerfield—SCHOOL—Daingerfield Independent School Dist., school. $350,000.

Tex., Fort Worth—SCHOOL—Fort Worth Independent School Dist., Ed. P. Williams, bus. mgr., 3210 W. Lancaster St., plans by Charles E. Armstrong, 1013½ University Dr., 1 story, masonry Sunrise Area Elementary School, 5100 Pinson St. $373,000. CD 4/13/56.

Tex., Friona—SCHOOL—Friona Independent School Dist., Friona, school. $350,000. CD 9/6/51.

▲ **Tex., Kingsville**—AGRICULTURAL, etc.—Texas College of Arts & Industries plans by Jessen, Jessen, Millhouse & Greeven, 2816 Hemphill Park, Austin, agricultural $550,000; engineering, $500,000; music-art-drama $450,000; physics, $350,000; power plant $150,000. Blum & Guerrero, 111 Neches St., Austin, consult. engrs.

Tex., McAllen—AUDITORIUM—City, City Hall, plans by Zeb Rike & Ewin Byers, 1303 Chicago St., municipal auditorium, $650,000. Bolt, Berenek & Newman, 16 Eliot St., Cambridge, Mass., and Vernon & Callins, 304 Green Ave., Taft, Tex. and W. E. Simpson Co., 945 Milam Bldg., San Antonio, Tex. consult. engrs. CD 10/26.

Tex., New Braunfels—SCHOOL—Comal Co. Rural High School Dist., New Braunfels, school, near here. $390,000.

▲ **Tex., Pasadena**—SCHOOL—Pasadena Independent School Dist., voted bonds May 4, Junior High School, $1,600,000; high school annex, $1,200,000; elementary School No. 1, $500,000; Junior High School addn., $514,000; upper grade school addns., $447,000; Elementary School No. 3, $425,000; Elementary School No. 4, $400,000; Elementary School No. 2, $375,000; lower grade school addns. $350,000. CD 4/18.

Va., Harrisonburg—SCHOOL—Harrisonburg School Bd., Harrisonburg, plans by Smithey & Boynton, archts. and engrs., 112 West Kirk Ave., Roanoke, Va., elementary school. $482,200. CD 8/18/53.

▲ **Wash., Mount Vernon**—JUNIOR COLLEGE—Union High School Dist. No. 1, voted $469,000 bonds May 14, 5 bldgs. of 68,000 sq. ft. for Junior College, $1,000,000. CD 4/11.

▲ **Wash., Olympia**—ADMINISTRATION—State Dpt. General Admin., Olympia, plans by Harmon, Pray & Detrich, Lloyd Bldg., Seattle, Zone 1, general admin. bldg. addn. $1,750,000. CD 11/2/55.

Wash., Puyallup—SCHOOL—School Bd., voted $120,000 bonds May 21, Physical Educ. Bldg., $480,000. CD 3/29.

Wash., Tumwater—SCHOOL—School Dist. 333, voted $100,000 bonds May 14, high school, $677,500, CD 4/29.

▲ **Wyo., Sheridan**—COLLEGE—Northern Wyoming Community College Dist., 6 and Saberton Sts., voted $500,000 bonds May 11, college bldg. $1,000,000. CD 4/9.

Ont., Perth—SCHOOL—Perth Bd. Educ., Perth, plans by M. J. McLean of Burgess & McLean, 53 Queen St., Ottawa, high school addn., Victoria St. $428,000.

▲ **Ont., Toronto**—HOME FOR AGED—Municipality of Metropolitan Toronto, 67 Adelaide St. E., plans by Page & Steel, 72 St. Clair Ave. W., 4 story, rein.-con. Home For The Aged, Kipling Ave. $1,700,000. Wallace, Carruthers & Assocs. Ltd., 72 Yorkville Ave., consult. engrs. CD 6/3/49.

Ont., Toronto—COLLEGIATE—Scarborough Bd. Educ., 1650 Kingston Rd., plans by Allward & Gouinlock, 245 Davenport Rd., 2 story collegiate, Lawrence Ave. E., Scarborough. $400,000.

(Continued on page 162)

SHAKE
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When the old flooring of the three bridges shown here needed replacing, the bridges were stripped to the stringers, repairs made and new decks of Bethlehem Formed Steel Bridge Flooring laid down. Result: strong, smooth, rattle-proof bridge floors, requiring little or no maintenance.

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The Bethlehem bridge floor over this bridge in Pennsylvania will require very little maintenance.

Applying the first surface course on a rural Connecticut bridge. A second wearing course is also applied.

(Continued from page 160)

COMMERCIAL BUILDINGS

Ark., Fayetteville—CHURCH—First Baptist Church, Dr. Andrew Hall, pres., plans by Paul Young, Jr., McIlroy Bldg., brick, full bsmnt. and tower, church, College Ave. north of present church. $400,000.

Ariz., Phoenix—SPORTS CENTER—Ariz. Associated Recreation, Inc., 117 W. Alta Vista, 32x207 ft. sports center, incl. bowling alleys, billiard hall, skating rink, coffee shop, etc. $575,000. James B. Donaldson, 321 S. 24th St., consult. engr.

Calif., Burlingame—APARTMENT—Morton Rude, builder, 531 W. Santa Inez Ave., Hillsborough, apartment, Trousdale and Marco Polo Way, Mills Estate, incl. swimimng pool, terraces, $500,000.

Calif., Chico—PHONE BLDG.—Pacific Telephone & Telegraph Co., 140 New Montgomery St., San Francisco, phone bldg. addns. and add 60-car parking facilities. $585,000.

▲ **Calif., Concord**—OFFICE—Pacific Telephone & Telegraph Co., 140 New Montgomery St., San Francisco, plans by Harry A. Thomsen, Jr., 315 Montgomery St., San Francisco, 3 story structure, 1 story bldg., 3rd floor addn. to PT&T Office. $2,000,000. Bids in about 1 month.

▲ **Calif., San Francisco**—CHAPEL—Apostleship of the Sea, Fremont and Harrison St., plans by Hewitt C. Wells, 165 Jessie St., 8 story wing, sanctuary with glass side stone faced structure, chapel, lodging and recreation center. $1,000,000.

▲ **Calif., San Francisco**—SERVICE—Bank of America, 300 Montgomery St., plans by Continental Service Co., Flood Bldg., 4 story, 200,000 sq. ft. floor space, service bldg., Market St. between 11th and South Van Ness Ave. $5,500,000. CD 5/17.

▲ **Calif., San Francisco**—RESIDENCE—University of San Francisco, 2130 Fulton St., Zone 17, plans by Milton T. Pflueger, 580 Market St., Zone 4, residence for faculty. $1,240,000. CD 5/1.

▲ **Conn., Bridgeport**—APARTMENT—Philip Bernstein, 9 Random Rd., Fairfield, 26 buildings, 228-unit, garden apartment development, Madison Ave. $2,000,-000.

Conn., Rockville—SHOPPING CENTER—John E. Hayes, 248 Farmington Ave., Hartford, plans by Russell & Gibson & Assocs., 1009 Farmington Ave., West Hartford, 1 story, 30,000 sq. ft., concrete, steel, cinder block shopping center, Union St. $500,000. CD 1/16.

Conn., Rockville—SHOPPING CENTER—Marbo Realty c/o Kane & Fairchild, archts., 734 Asylum Ave., Hartford, shopping center, Windsor Ave. $750,000.

Conn., Westport—SYNAGOGUE—Temple Israel Bldg. Fund, 63 Main St., plans by Percival Goodman, 1860 Broadway, Zone 23, synagogue. $400,000.

Del., Wilmington—OFFICE—Delaware Power & Light Co., 600 Market St., office addn. $344,000.

Del., Wilmington—CHURCH, etc.—First Unitarian Church, 807 West St., church and Sunday School. $344,000.

▲ **Fla., Coral Gables**—SCIENCE, etc.—University of Miami, 1200 Campo Sano Ave., plans by Robert M. Little, 280 Brickell Ave., Miami, science bldg., University of Miami, $3,000,000-$4,000,000. CD 4/9; 7 story, part bsmnt., rein.-con. 720 units dormitory, $2,000,000. Norman J. Dignum & Assocs., 260 Palermo Ave., Coral Gables, struc. engr. for dormitory; and Peabody & Co., 4035 Ponce De Leon Blvd., Coral Gables, mech. engr. for dormitory. CD 4/7.

▲ **Fla., Fort Lauderdale**—APARTMENT—Kitimat Corp., c/o M. R. Burggraff, 1435 N.E. 26 St., 12 story, 55x320 ft. concrete block apartment, 333 Sunset Dr. $2,000,000.

▲ **Ky., Louisville**—RETAIL STORE—Stewart Dry Goods Co., 4 and Walnut Sts., plans by Abbott & Merkt & Co., 10 E. 46 St., New York, N. Y., 5 story, 112x113 ft., brick, rein.-con. retail store. Over $1,000,000. E. T. Hutchins, 1208 Hayburn Bldg., assoc. archt.

Mass., Beverly—CHURCH—St. Peter's Episcopal Church, Robert A. Whitmore, chn. Comn. Bldg., plans by Adden, Parker, Clinch & Crimp, 177 State St., Boston, church addn., Ocean St. $350,000. Constr. late 1957.

Mass., Georgetown—HOUSING—D'Annolfo Bros., Inc., 34 Linwood Rd., Stoneham, 33 unit housing development, 100-acres, Baldpate Rd., Central and Andover Sts. $500,000.

Mass., Hopkinton—SCHOOL, etc.—St. John the Evangelist, R. C. Parish, Rev. George F. Sullivan, pastor, 33 Main St., plans by Maginnis & Walsh & Kennedy, 126 Newbury St., Boston, parochial school and convent. $350,000.

▲ **Mass., West Roxbury**—HOME—Hebrew Home for the Aged, A. Paul Cohen, pres., 21 Queen St., Dorchester, plans by Arthur Rosenstein, 184 Boylston St., Boston, and Krokyn & Krokyn, 184 Boylston St., Boston, Home for the Aged, Centre St. $3,000,000-$4,000,000. Goldberg, LeMessurier Assoc., 667 Boylston St., Boston, consult. engrs. Bids this summer. Plans ready early July.

▲ **Mich., Detroit**—SYNAGOGUE—Congregation Shaarey Zedek, 2900 W. Chicago St., plans by Percival Goodman, 1860 Broadway, New York 23, N. Y., synagogue. $3,000,000.

▲ **Mich., Detroit**—APARTMENT—Ben Shacket, 8801 Puritan St., plans by Henry Abrams, 800 Livernois St., Ferndale, 20 story apartment and 600-car underground garage, E. Jefferson Ave. near Memorial Park. $10,000,000.

Mich., Wyandotte—Y.M.C.A.—Young Men's Christian Assn., 2020 Witherell St., Detroit, Zone 26, new Wyandotte Branch, combined men and women facility. $850,000.

▲ **Minn., Bloomington** (P. O. Minneapolis)—SHOPPING CENTER—G. Levine & H. Brooks, c/o W. B. Kenneth, archt., 80 South Seventh St., Minneapolis, 10 stores of 60,000 sq. ft. floor space, shopping center, Pennsylvania Ave., South and 90th St. $1,000,000.

Mo., Kirkwood (St. Louis 22, P.O.)—OFFICE—Syndicate, c/o Paul Collopy, real estate agt., 1019 N. Kirkwood Rd., 2 story office bldg. for doctors. $400,-000.

N. H., Manchester—SYNAGOGUE—Anshe Shepard Synagogue, William, Katz, pre. and chn. Bldg. Comn., 235 Central St., plans by Engene Weisberg, 219 Central St., Lowell, Mass., Synagogue, Salmon and Pine Sts. $350,000.

N. H., Manchester — SYNAGOGUE — Temple Adath, Yeshurun Manchester, plans by Percival Goodman, 1860 Broadway, New York 23, N. Y., synagogue. $344,000.

▲ **N. J., Long Branch**—HOSPITAL—Monmouth Memorial Hospital, 3rd Ave., plans by Ferrenz & Taylor, 152 W. 42 St., New York, N. Y., 54-bed south wing, plans by James Mancuso, 9 Memorial Parkway, Long Branch, N. J., auxiliary hall, and plans by Wm. Chirgotis, 968 Stuyvesant Ave., Union, N. J., nurses residences, etc. $1,750,000.

▲ **N. J. Millville**—SHOPPING CENTER—Food Fair Properties, Inc., 401 E. Erie Ave., Phila., Pa. 21-store shopping center, High and Broad Sts., $2,500,000.

N. J., Paramus—SYNAGOGUE—Jewish Community Center of Paramus, plans by Percival Goodman, 1860 Broadway, New York 23, N. Y., synagogue. $344,-000.

▲ **N. J., Paterson**—OFFICE—City, City Hall, office bldg., 26 acre site, on east side of city. $3,100,000.

N. Y., Brooklyn—APARTMENT—801 Ditmas, Inc., 1642 Arkansas Dr., Valley Stream, plans by George G. Miller, 125 W. 45 St., New York, 19, 6 story apartment, 805 Ditmas Ave. $450,000.

N. Y., Buffalo—CLASSROOM—Nardin Academy, 135 Cleveland Ave., classroom bldg. $500,000.

▲ **N. Y., New York**—HOUSING—Dennis Lane Apartments, Inc., 113 W. 42 St., New York, Zone 36, limited dividend cooperative housing; two 14-story apartments, 181 St. and Belmont Ave. for 280-families, $4,000,-000. To go ahead in Summer of 1957.

▲ **N. Y., New York**—SHOPPING CENTER—Grant Shopping Center, Inc., c/o S. J. Kessler & Sons, 551 Fifth Ave., New York, Zone 17, shopping center, Broadway and 125 St. $1,000,000.

▲ **N. Y., New York**—OFFICE—New York Central Railroad Co., 230 Park Ave., New York, Zone 17, plans by Powers & Kessler, 270 Park Ave., New York, Zone 21, office alterations, 230 Park Ave. $1,200,000.

N. Y., Roslyn—SYNAGOGUE—Temple Beth Sholom, Roslyn Rd., plans by Percival Goodman, 1860 Broadway, Zone 23, New York, synagogue. $344,000.

▲ **O., Breckville**—MOTEL, etc.—Owner, c/o Alfred Soltz, 740 Leader Bldg., Cleveland, Zone 14, plans by Rudolph Orgler, 7112 Euclid Ave., Cleveland, Zone 3, 100-unit motel and service station and Howard Johnson Restaurant, Route 21, about 1 mi. north of Ohio Turnpike. $1,000,000.

O., Cincinnati—HOMES—Bernard Naber, 5547 Cheviot Rd., 52 one story, bsmnt., brick homes off West Fork Rd. $950,000. Edw. Niemeier, 3818 N Bend Rd., consult. engr.

O., Cleveland—OFFICE—Aluminum Cooking Utensil Co., subsidiary, Aluminum Corp. of America, Alcoa Bldg., Pittsburgh, Pa., 2 story office bldg. $300,000-$500,-000.

▲ **O., Cleveland**—OFFICES—First-through Fifth Improvement Companies, 1106 Citizens Bldg., Zone 14, 3 to 5 office bldgs. on North side Shaker Blvd. $2,-500,000.

▲ **O., Hamilton**—HOSPITAL—Mercy Hospital, Sister Mary Benignus, admin., wing to existing hospital. $2,668,000.

▲ **O., Lakewood**—APARTMENT—Pat Gattozzi Constr. Co., 1534 Belvoir Blvd., Cleveland, Zone 21, plans by Joseph Ceruti & Assoc., 7113 Euclid Ave., Cleveland, Zone 3, 10 story apartment, 11802 Edgewater Dr. $1,500,000. Barber, Magee & Hoffman, 1900 Euclid Ave., Cleveland, Zone 15, consult. engrs.

▲ **O., Maple Heights**—APARTMENT—A. Siegler & Sons, 5117 Lee Rd., Bedford, plans by Weinberg & Teare, Citizens Bldg., Cleveland, Zone 14, 8-11 suite apartment bldgs., east side of Warrensville Center Rd., opposite Maple Heights Fire Station No. 3. $1,150,000.

O., Parma Heights—Y.M.C.A.—Young Women's Christian Assn., 1710 Prospect Ave., Cleveland, Zone 15, plans by Ward & Conrad, Hanna Bldg., Cleveland, Zone 15, Southwest Branch of Y.W.C.A., 3-acre site, Smith Rd., between Halle Bros. and W. 130 St. $400,000.

Okla., Shawnee—DORMITORY—Oklahoma Baptist University, Shawnee, plans by Noftsger & Lawrence, 2756 N.W. 23 St., Oklahoma City, 210-student dormitory. $700,000.

▲ **Pa., New Castle**—SHOPPING CENTER—Neshannock Development Corp., New Castle, shopping center, North Gate Plazza Shopping Center, 3½ mi. north of here. $4,000,000.

▲ **Pa., Phila.**—HOSPITAL, etc.—Philadelphia College of Osteopathy, 48 and Spruce Sts., plans by Nolen & Swinburne, 1601 Locust St., and George M. Ewing, Western Savings Fund Bldg., 600-bed hospital, classroom bldg., nurses training center and dormitory, $10,000,000. CD 6/28/54.

Pa., Phila. — HOME — Southern Home for Children, Broad and Morris Sts., plans by Howell Lewis Shay & Assocs., Packard Bldg., children's home. $800,000.

▲ **Tex., Amarillo**—HOSPITAL—St. Anthony's Hospital, c/o Citizens Health Council, c/o Chamber Commerce, 5 story brick, masonry hospital. $1,800,000.

Tex., Dallas—HOTEL—Tex-Mex Corp., c/o Vaughn Bldg., 102-unit "Flying Hotel" across from Love Field. $500,000.

▲ **Tex., Houston**—CHURCH—Berachah Church, 502 Lamar St., church plant, 6-acre site, Sage Rd. $1,500,-000.

▲ **Tex., Huntsville**—GIRLS APARTMENT HOUSE, etc. —Sam Houston State Teachers College plans by Wirtz, Calhoun, Tungate & Jackson, 2506 Richton St., Houston, 3 story girls' apartment house, $350,000; Phase 3, incl. four 2 story men's brick exterior cooperative homes, $350,000; 2 and 3 story dormitory, $350,000; remodeling 5 bldgs. for women, $350,000. R. L. Reid & Joe A. Poole, 2506 Richton St., Houston, Tex., consult. engrs. CD 1/23.

Tex., Mathis—HOTEL, etc.—Alex Cox & Assocs., 2733 S. Port St., Corpus Christi, hotel and resort, landing strip on Mathis side of Lake Corpus Christi, Sealy Dam. $350,000.

▲ **Tex., San Antonio**—CENTRAL OFFICES—Southwestern Bell Telephone Co., 208 S. Akard St., Dallas, central offices, Midway 6 in Martinez area, Ackerman and Dietrich Rds., $350,000; Oxford in Wetmore Area, Donella Dr. and U. S. Hy. 81, $350,000; at Milton 9 in Sayers, F.M. Stewart Rd., $350,000; in SE section of city, near White and Sinclair Rds., $350,000.

▲ **Wash. Seattle**—HOSPITAL—Northgate General Hospital, 120 Northgate Plaza, plans by J. Graham & Co., 1426 5th Ave., 200-bed hospital. $4,000,000.

▲ **Ont., Thornhill**—HOUSES—Meredith Developments Ltd., c/o David McLean Real Estate Ltd., Yonge St., 92 houses in Maryvale area, Vaughan Twp., near here. $2,500,000.

▲ **Ont., Toronto**—OFFICE—Baycol Ltd., c/o Farlinger & Langer Ltd., 17 Dundonald St., plans by Page & Steele, 72 St. Clair Ave. W., 12 story, 100,000 sq. ft. office bldg., Bay and College Sts. $1,750,000. Yolles & Rotenberg, Ltd., 111 Richmond St. W., consult. engrs.

Ont., Toronto — ADMINISTRATION — Metro Toronto Catholic Children's Aid Society, 67 Bond St., administration bldg., Maitland St. $500,000.

Ont., Toronto—OFFICE—Toronto Builders Exchange, Inc., 1104 Bay St., plans by Design Associates Ltd., c/o Wilson & Newton, 696 Yonge St., multi-story office, 359 Bloor St. W. Over $350,000.

▲ **Que., Grand'Mere**—SCHOOL—Comitee Diocesain, Shawinigan South, normal school. $1,000,000.

Que., Iberville—SCHOOL—Couvent Notre Dame de Loureds, Principale St., plans by Tougas & Morin, 217 rue Jacques Cartier St. Johns, school addn. on 3 Ave. $400,000.

Que., Montreal—APARTMENT BLOCK—Paul H. Craig, Inc., 274 Brookfield Ave., Mount Royal, plans by C. E. Charbonneau, 1900 rue Bellevue, St. Bruno, 68-suite 11 story, bsmnt., apartment block, Drummond St., near Sherbrooke St. $500,000.

▲ **Que., Three Rivers**—HOUSING—Laviolette Development Co., c/o John Bennett, 1432 Notre Dame St., 100-unit housing development, Banlieu des Trois Rivieres. $1,000,000.

INDUSTRIAL BUILDINGS

Ala., Birmingham—PLANT—Jackson Industries, Inc., 14-S. 55th St., remodel plant facilities for mfg. of pulp, veneer making machinery, $500,000.

▲ **Ariz., Phoenix**—WAREHOUSE, etc.—Ducommun Metals & Supply Co., 2626 E. Washington, plans by John Stephens & Assocs., 603 N. 3rd Ave., warehouse-office bldg. $1,000,000.

Conn., Hamden—HEADQUARTERS—New Haven Water Co., 100 Crown St., New Haven, service dept., headquarters, Skiff St. $490,000.

Conn., Hartford—WAREHOUSE, etc.—Capitol Light & Supply Co., 6 Huntley Pl., 1 story, 40,000 sq. ft. warehouse, office and display bldg., Locust St. $400,-000.

Conn., North Haven—PLANT—Glynne Realty Co., c/o Harry N. Glynne, 66 Middle Rd., Hamden, 25,000 sq. ft. electronic equip. mfg. plant. $250,000.

Conn., Rockville—FACTORY—Amco Tool & Die Co., 95 Brooklyn St., 1 story, 25,000 sq. ft. factory, Wilbur Cross Hy. $200,000.

Del., Marshallton—PLANT—Haveg Industries, Marshallton, chemical plant addn. $100,000.

Ill., Bellwood—FACTORY, etc.—Pneu-Trol Devices, Inc., 1436 N. Keating Ave., Chicago, plans by Ralph E. Harris, 53 W. Jackson Blvd., 1 story factory and office bldg., 30th and Grand Ave., $200,000.

Ind., Hammond—SHIPPING, etc.—Youngstown Steel Door Co., 5032 Columbia Ave., 1 story shipping bldg. and machine shop, Columbia Ave. $250,000.

▲ **Ind., Indianapolis**—WAREHOUSE, etc.—Radio Corp. of America, 501 N. LaSalle St., plans by Allen G. Kelly, consult. engrs.-archts., 333 N. Penn. St., Zone 4, 2 story, 200x200 ft., steel fr. concrete warehouse storage. $2,000,000. CD 8/14/46.

▲ **Ind., Terre Haute**—PLANT OFFICE, etc.—The American Brass Co., Waterbury 20, Conn., 2 story, 15,680 sq. ft. plant general office $1,318,000; 1 story, 85x150 ft. laboratory $298,000; other buildings, $60,000, all masonry, steel. The Anaconda Co., 26 Broadway, New York 4, N. Y., consult. engrs. CD 1/20/55.

▲ **Iowa, Des Moines**—PUBLISHING PLANT—The Meredith Publishing Co., 1716 Locust St., publishing plant. $8,000,000.

Me., Island Falls—PLANT—Maine Potato Processing Co., plans by Alonzo J. Harriman, Inc., 292 Court St., Auburn, potato processing plant. $500,000. Constr. 1957.

▲ **Minn., Minneapolis** — PLANT — Electric Machinery Mfg. Co., 800 Central Ave. N. E., 100,000 sq. ft. floor space 1 story plant addn. $1,000,000. K. M. Clark Eng. Co., Sexton Bldg., Minneapolis, consult. engr. CD 10/3/51.

N. J., Trenton—SHOWROOM, etc.—Natural Gas Oil Products Co., 1650 N. Calhoun St., showroom, storage bldg. and storage tanks, $100,000.

N. Y., Amherst—PLANT—Carmody Corp., 3119 Genesee St., Buffalo, mfg. plant. $125,000.

▲ **O., Akron**—PLANT—The B. F. Goodrich Co., Industrial Products Div., 1247 sq. ft. adhesives mfg. plant. $2,500,000. Constr. this summer. CD 7/21/51.

▲ **O., Lockland**—PLANT—Gardner Board & Carton Co., 407 Charles St., Middletown, 200,000 sq. ft. plant, $2,000,000; power house and parking $1,800,000.

▲ **O., Manchester**—PLANT—Manchester Machine Co., subsidiary, Gardner Board & Carton Co., 407 Charles St., Middletown, plant. $1,300,000.

Pa. Phila.—WAREHOUSE, etc.—Phelps Dodge Coppers Products Co., Suburban Station Bldg., warehouse, office and railroad sidings. $200,000.

Tex., Dallas—MOTOR AND SERVICE STATION—Town North Motors, 4908 Lovers Lane, Houston, masonry auto motor and service station, $100,000. F. J. Woerner & Co., 1008 Stonewall St., Dallas, consult. engr.

▲ **Tex., El Paso**—ELECTRIC PLANT, etc.—El Paso Electric Co., 215 N. Stanton St., c/o Wm. Holik, pres., electric plant, $12,000,000. electric power lines, $225,000.

Tex., Houston—PLANT—Tube-Kote, Inc., 2727 Holmes St., plant expansion. $150,000.

▲ **Utah, Salt Lake City**—PARKING GARAGE—Auerbach Co., State and Broadway, plans by Ashley T. Carpenter, 203 Crandall Bldg., 7 story 14 level 500-car parking garage. $1,000,000.

▲ **Utah, Salt Lake City**—PLANT—Litton Industries, Inc., San Carlos, Calif., 60,000 sq. ft. electronic microwave power tubes mfg. plant. $2,000,000.

Wis., Fond du Lac—PLANT—Fond du Lac Development Corp., 127 Cottage Ave., 80,000 sq. ft. container plant. $800,000. Intl. Paper Co., Chicago, Ill., lessee.

Wis., South Milwaukee—WAREHOUSE—Line Material Industries, 2201 12 Ave., 224x288 ft. lift slab constr., steel, glass warehouse. $450,000.

Que., Marieville—FACTORY—Les Produits Laitiers Marieville Ltee, 101 rue St. Charles, Marieville, plans by Maurice Robillard, 375 Blvd. Laurier, Beloeil, 151x200 ft., factory at town limits. $125,000.

Que., Montreal—FACTORY—Upjohn of Canada Ltd., 865 York Mills, Toronto, Ont., 15,000-20,000 sq. ft. factory, Laurentian Blvd. at St. Louis St. $150,000.

UNCLASSIFIED

Alabama—NATURAL GAS SYSTEM—Lamar Co. Gas Dist., Vernon, natural gas system in Vernon, Millport and Kennedy. $680,000. Harry Hendon & Assocs., Bldg., Birmingham, consult. engrs. CD 5/10.

Calif., Lakewood—SWIMMING POOL—City Council, City Hall, Pat McCormick Swimming Pool, dressing rooms and site preparation, Simon Bolivar Park, $150,000. Charley C. Curtis (SE) 8667 Atlantic Ave., Long Beach, and Community Facility Planners, 8942 Wonderland Park, Los Angeles, Calif., consult. engrs.

Colorado—RURAL DISTRIBUTION LINES—San Isabel Electric Assoc., Pueblo, 121 mi. rural distr. line and sys. imprvs., Pueblo Co. $825,000. CD 8/17/55.

▲† **D. C., Wash.**—STADIUM—D. C. Armory Bd., 2011 E. Capitol St., stadium. $6,000,000 (no appropriation).

▲ **Illinois**—STATE PARKS, etc.—State Div. Architecture & Eng., State Capitol, Springfield, constr. lodge, roadways, furnishings, etc. Illinois Beach State Park, Lake Co. $2,665,000. Bids in July. CD 6/1/44.

▲ **Ill., Springfield**—FAIR BUILDINGS—State Div. Architecture & Eng., State Capitol, Springfield, new buildings at Illinois State Fairgrounds, $1,277,000. CD 2/7/55.

Mississippi—RURAL DISTRIBUTION LINES—Natchez Trace Electric Power Assoc., Houston, 25 mi. electric distr. line and system imprvs., Chickasaw Co. $520,000. CD 9/16/49.

▲ **N. Y., Buffalo**—CARGO PIER—City, City Hall, 300 ft. wide cargo pier with 600 ft. and 475 ft. long berths, warehouse, bridge crane and tracks, connecting roadways between cargo pier and expressways. $5,500,000.

Ohio—RURAL DISTRIBUTION LINES—Firelands Electric Co-operative, New London, 50 mi. rural distr. line and sys. imprvs., Huron Co. $675,000. CD 4/22/54.

O., Cleveland—GOLF COURSE—Cleveland Metropolitan Park Bldg., Standard Bldg., Zone 13, plans by Ben Zink, Route 306, Mentor, 18-hole golf course, lighted driving range, service bldg., 200-car parking and 2 artificial lakes in Bedford Reservation of Metropolitan Park System, Walton Hills. $120,000. Harold W. Groth, c/o owner, Park Bd., engr. CD 11/7/52.

Oregon—RURAL DISTRIBUTION LINES—Eastern Oregon Electric Co-operative Assoc., Pendleton, 7 mi. rural distr. line and sys. imprvs., Weston Co. $150,000.

▲ **Texas**—RURAL DISTRIBUTION LINES—Medina Electric Co-operative, Hondo, 794 mi. electric distr. line, 135 mi. 69 kv. transmission line, new sub-station facilities and sys. imprvs., Medina Co. $5,985,000. CD 9/8/54.

Texas—TELEPHONE SYSTEM IMPRVS.—Rising Star, telephone sys. imprvs., incl. rural pole lines and equipment storage, Brown, Callahan, Comanche, Coleman and Eastland Counties. $545,000.

▲ **Texas**—RADIO STATIONS AND TOWERS—Southwestern Bell Telephone Co., 1407 Jefferson, Houston, microwave radio amplifying stations and towers in Shiner, $200,000. Weimar, $200,000; Seguin, $200,000; Cat Spring, $200,000; Bulverde, $200,000.

▲ **Utah**—TRANSMISSION LINES—Utah Power & Light Co., Kearns Bldg., Salt Lake City, 120 mi. transmission lines from Richfield to Cedar City, $2,800,000; 70 mi. transmission lines to Glen Canyon Dam from Richfield to Glen Canyon Dam, $1,900,000.

Wash., Anacortes—YACHT CLUB—Admiralty Yacht Club & Boatel, c/o W.E.F. Powell, Stanwood, plans by G. C. Field, Jones Bldg., Seattle, Zone 4, yacht club. $350,000.

Wisconsin — RURAL DISTRIBUTION LINES — Taylor County Electric Co-operative, Medfore, 12 mi. electric distr. line and sys. imprvs., Taylor Co. $182,000.

▲ **Man., Winnipeg**—RACING TRACK—Western Canada Harness Racing Services, subsidiary of Keller Corp., Norway, Me., U.S.A., racing track and buildings. $1,700,000.

Ont., Toronto—ICE RINKS, etc.—Forest Hill Village, 333 Lonsdale Rd., ice rinks and field house "Memorial Park" north of Chaplin Cresent, $250,000. R. A. Stencel & Assocs., 11 Muntions St., consult. engrs.

Ont., Toronto—COMMUNITY CENTER—Scarborough Twp., 2001 Eglinton Ave. E., community centre, Lawrence Ave. E and Birchmount Rd., Scarsborough. $200,000.

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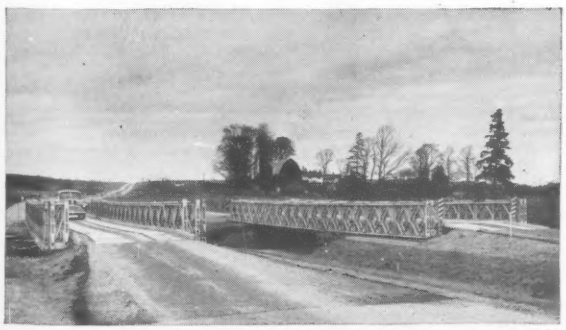

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NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

June 12 Maine

STREETS AND ROADS

June 11 Massachusetts June 13 Connecticut

▲† **Mass., Falmouth**—HOUSING—BA 6/14—U. S. Eng., 150 Causeway St., Boston, 200 unit, family housing, Otis Air Force Base, ENG-19-016-57-209. $3,100,000. Plans deposit $25, refundable. Extended date. Architect's Collaborative, 96 Mt. Vernon St., Cambridge, Mass., archts.-engrs. CD 5/6.

BUILDINGS—BA

Conn., Somers—SCHOOL—BA 6/11—Town, Town Hall, 1 story, steel, masonry high school, Ninth District Board. $996,104. Olson & Miller, 742 Asylum Ave., Hartford, archts. Englehardt, Englehardt & Leggett, 221 W. 57 St., New York, N. Y., engrs. CD 9/21.

HEAVY CONSTRUCTION—LB & CA

▲† **Wes-Julian Constr. Corp.**, 850 Boston-Providence Hy., Dedham, Mass., LB **$2,949,500**, est. $2,369,920 local protection project, Woonsocket and Smithfield Blackstone River Basin and North Smithfield CIVENG-19-061-57-81, RHODE ISLAND. U. S. Eng., 150 Causeway St., Boston, Mass. CD 4/10.

▲ **CONNECTICUT**—State Hy. Dpt., 165 Capitol Ave., Hartford,

L. G. DeFelice & Sons, Inc., Nettleton Ave., North Haven, Conn. CA **$2,324,529** Proj. 36-73, 11,622 lin. ft. dual lane c. conc. Shelton-Derby-Ansonia Expressway, incl. rein.-con. and rolled beam composite bridge etc., relocation of Route 8, Ansonia, Derby and Seymour. Bids May 6, awarded May 27. CD 5/8, under LB.

▲ **CONNECTICUT**—State Hy. Comn., State Office Bldg., Hartford,

S & M Constr. Co., 30 Salmon St., Providence, R. I., LB **$2,628,784** (10 bidders) Proj. 78-36, grading, drainage, c. conc. 23,664 ft. Route 2 incl. 2 grade separation structures, 2 river crossings, structures, 1 bridge over New York, New Haven & Hartford R.R. and one twin box culvert F-4 (6) Marlborough and Colchester. Bids May 27. CD 5/8.

BUILDINGS—LB & CA

▲ **Town, Supt. Schools**, 24 Redington St., Swampscott, Mass., rejected bids May 16, SENIOR HIGH SCHOOL, off Forest Ave., SWAMPSCOTT, MASS., LB **$1,595,000**. CD 5/20, under LB.

▲ **E & F Constr. Co.**, 94 Wells St., Bridgeport, Conn., CA Est. Approx. **$1,000,000**. 5 story, penhouse, 71x112 ft., masonry, concrete ELECTRICAL ENGINEERING LABORATORY, Hillhouse Ave., NEW HAVEN, CONN. Yale University, 119 College St., New Haven, Conn. Bids May 15, awarded May 29. CD 5/8.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

June 11 New Jersey

HEAVY CONSTRUCTION—LB & CA

▲ **Morse-Boulger Destructor Co.**, 80 Fifth Ave., New York 11, N. Y., CA **$1,879,147**. Betts Ave. Incinerator exten., 53 Ave. and 58 Lane, Queensboro, NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Mar. 13. CD 3/20, under LB.

▲ **T and T Contg. Corp.**, 4814 Glenwood Rd., Brooklyn 3, N. Y., CA **$2,504,281**. combined sewers in Flatlands Ave. (Fairfield Ave.) and Cleveland St.; grading Flatlands Ave. (Fairfield Ave.) and Cleveland St. BROOKLYN, N. Y. President Brooklyn Boro, Boro Hall, Brooklyn 1, N. Y. Bids Apr. 23. CD 4/25, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., State Hy. Office Bldg., 1035 Parkway Ave., Trenton,

Franklin Contg. Co., 12 Central Ave., Newark, N. J., LB **$1,621,623** (5 bidders), grading, paving, drainage 4.174 mi Route 42, Sects 13D and 14C (North South Freeway), from Station 323 plus 00 to Route 42, Camden and Gloucester Counties. CD 5/8.

▲ **PENNSYLVANIA** — State Hy. Dpt., 506 North Office Bldg., Harrisburg,

Union Paving Co., 1 E. Wynnewood Rd., Wynnewood, Pa., CA **$1,744,400**. wid'n., partial replacing 25,386 ft. crushed aggreg. base with bit. surf. variable in width, 1 plate girder and 3 rein.-con bridges, TR 611, Upper Moreland, Horsham and Warrington Twps, Montgomery and Bucks Counties. Bids May 3, awarded May 24. CD 5/9, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 Jorth Office Bldg., Harrisburg,

McCloskey & Co., 1620 W. Thompson St., Phila. 21, Pa., CA **$8,153,024**. two plate girder bridges 3,892 ft. Roosevelt Ave. Exten., Philadelphia, L.R. 67058 (1), Philadelphia Co. Bids Apr. 26, awarded May 24. CD 5/1, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

Adam Eidemiller, Inc., Greensburg, Pa., CA **$1,555,927** 9,900 ft. divided hy. c. conc. with earth divisor, one I-beam and one plate girder with earth divisor one I-beam and one plate girder bridge, T. R. 31, Hempfield Twp., Westmoreland Co. Bids May 10; awarded May 24. CD 5/15, under LB.

BUILDINGS—LB & CA

▲ **J. Rich Steers Co.**, 17 Battery Pl., New York 4, N. Y. CA **$4,572,000**. general constr. South Bronx Marine TRANSFER STATION, north shore of East River between Hunts Point Ave. and Farragut St., Bronx Boro, NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., New York Zone 7, N. Y. Bids Jan. 30. CD 2/4, under LB.

▲ **CWC Constr. Corp.**, 56 Court St., Brooklyn, N. Y., CA Est. **$4,000,000**. limited dividend co-operative HOUSING; two 14 story apartments, 181 St. and Belmont Ave., for 280 families, NEW YORK, N. Y. Dennis Lane Apartments, Inc., 113 W. 42 St., New York 36, N. Y. Samuel Paul & Seymour Jarmul, 89-51 164 St., Jamaica, N. Y., archts. CD 5/22.

▲ **Alexander Muss & Sons**, 45 N. Station Plaza, Great Neck, N. Y., CA Est. **$3,000,000**. 212 HOUSES, on tract at Jericho Turnpike and Route 25A, SMITHTOWN, N. Y. Country Village Homes, c/o contractor. CD 1/18.

▲ **Bakelite Co.**, 30 E. 42 St., New York 17, N. Y., Separate Contracts. **$1,000,000**. MANUFACTURING and LABORATORY BLDGS., BOUND BROOK, N. J. CD 11/5.

▲ **Dan McCarrow & Sons**, 550 Pine St., Elizabeth, N. J., CA **$1,150,550**. Thomas Jefferson HIGH SCHOOL addn., ELIZABETH, N. J. Bd. Educ., City Hall, Elizabeth, N. J. CD 5/20.

▲ **John K. Ruff, Inc.**, 3010 Ridgewood Ave., Baltimore, Md., LB **$1,296,296** (9 bidders) HIGH SCHOOL, ELKTON, MD. Bd. Educ., Elkton, Md. Bids May 28, CD 4/25.

▲ **Hedin Constr. Co.**, 2900 Newton St. N. E., Wash., D. C., LB **$1,646,000** (10 bidders) Newport Mills Rd. JUNIOR HIGH SCHOOL, Kensington, ROCKVILLE, MD., Montgomery Co. Bd. Educ., Rockville, Md. Bids May 28, CD 4/26.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

June 14 Kentucky

▲† **La., Shreveport**—HANGAR—BA 6/25—U. S. Eng., P.O. Box 867, Little Rock, Ark., org. maintenance hangar, automatic sprinkler sys., fire alarm sys., heating, ventilating and air-conditioning boiler plant, auto maintenance shop, etc. Barksdale Air Force Base, ENG-03-050-57-48. $1,000,000-$3,000,000. CD 8/23.

HEAVY CONSTRUCTION—LB & CA

▲† **L. G. Wasson Coal Mining Corp.**, Boonville, Ind., CA **$3,497,900**. constr. cofferdam at Barkley dam site, Cumberland River, Livingston Co., KENTUCKY. U. S. Eng., P. O. Box 1070, Nashville, Tenn. Bids May 14. CD 5/20, under LB.

BUILDINGS—LB & CA

▲ **Hargett Constr. Co.**, 113 Walnut St., Lexington, Ky., CA **$1,069,000**. Lexington Medical CLINIC BLDG., LEXINGTON, KY. Lexington Building Corp., N. Upper St., Lexington, Ky. Bids May 1, awarded May 23. CD 5/14, under LB.

▲ **Geo. A. Fuller Co.**, 1 Peachtree St., Atlanta, Ga., LB Est. **$3,500,000**. pressed glass head light LAMP PLANT and railroad siding, OFFICE and CAFETERIA, SOMERSET, KY. General Electric Co. (Lamp Div.), River Rd., Schenectady, N. Y. Bids May 16. CD 5/1.

▲ **J. A. Jones Constr. Co.**, 401 Church St., Nashville, Tenn., LB **$2,120,000** constr. water in-take sys. for steam generating plant; LB **$494,000**. access road to power plant, incl. 2 bridges and temporary parking facilities, MEMPHIS, TENN. Memphis Light Gas & Water Commn., Memphis, Tenn. CD 8/26/55;

Continental Electric Co., 325 E. Ferry St., Newark, N. J., LB **$223,775** installing misc. switch gear unit sub-stations and associated equipment at steam plant (MEMPHIS TENN.).

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

June 11 Indiana

BUILDINGS—BA

▲ **Wis., Chippewa Falls**—SCHOOL—BA 6/20—Bd. Educ., Chippewa Falls, 35-room Senior high school. $1,600,000. Plans deposit $50. CD 5/2/56.

Wis., Madison—GARAGE—BA 6/25—Dane Co., 724-car, rein-con. parking garage $800,000. Plans deposit $25, CD 10/24/56.

BUILDINGS—SLC

▲ **O., Wickliffe**—SEMINARY—Soon lets contract Catholic Diocese of Cleveland, 1027 Superior Ave., Cleveland, Zone 14, Borromeo Minor Seminary addn. $1,500,000. Stickle & Assoc., 2422 Prospect Ave., Cleveland, Zone 15, archts. CD 5/13.

BUILDINGS—LB & CA

▲ **The Albert M. Higley Co.**, 2036 E. 22 St., Cleveland, O., CA **$1,700,000**. PHYSICS BLDG. and AUDITORIUM, Case Institute Technology, CLEVELAND, O. Case Institute of Technology, 10900 Euclid Ave., Cleveland 6, O. CD 2/24/56.

▲ **Wm. E. Schweitzer Co.**, 2207 Dodge Ave., Evanston, Ill., CA **$1,000,000**. 4 story, brick North Center Accounting OFFICE BLDG., Grace and Western Ave., CHICAGO, ILL. Illinois Bell Telephone Co., 208 W. Washington Blvd., Chicago, Ill. CD 4/29.

▲ **J. L. Simmons Co.**, 506 S. Wabash Ave., Chicago, Ill., LB **$1,064,400**. (3 bidders), general contract MEN'S DORMITORY BLDG., FOOD SERVICE BLDG., MADISON, WIS., Wis. University Bldg. Corp., Madison, Wis. Bids May 16. CD 5/7.

▲ **Barton-Malow Co.**, 2631 Woodward Ave., Detroit, Mich., LB **$1,063,000**, (9 bidders), Pub. Wks. GARAGE, Livernois and Vernon Sts., DETROIT, MICH., City, Glenn C. Richards, CPW, Detroit, Mich. Bids May 21. CD 5/18.

▲ **Gordon-Begin Co.**, 14850 James Couzens, Detroit, Mich., Owner Builds, **$10,500,000**, 586 brick HOUSES, Compton Village, 5 Mile Rd. and Middlebelt, LIVONIA, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

June 18, 19 Texas

STREETS AND ROADS

June 14 Minnesota June 18, 19 Texas

HEAVY CONSTRUCTION—BA

▲† **Texas**—BA 7/17—U. S. Eng., P. O. Box 1600, Fort Worth, Angelina River Bridge and earthwork approaches State Hy. 147, McGee Bend Reservoir, Angelina and San Augustine Counties about 30 mi. southeast of Lufkin, ENG-41-443-57-41. CD 9/14.

BUILDINGS—BA

▲† **Tex., Big Spring**—HOUSING—BA 7/1—Procurement Officer, Webb Air Force Base, brick veneer, concrete, 460 housing units, Webb Air Force Base, $7,500,000. Plans deposit $50. John W. Floors, 1401 W. Lancaster St., Fort Worth, archt. CD 2/7/56.

HEAVY CONSTRUCTION—LB & CA

▲ **MINNESOTA** — State Hy. Dpt., 1246 University Ave., St. Paul, Bids opened 5/10,

Minn.—**Badger Contractors**, 401 Russell St., Baraboo, Wis. CA **$1,387,452**, base, bit. surf. and bridges, 6.2 mi. between 2 mi. S.E. of Lamolle and Homer, Winona Co.;

Minn.—**McCree & Co.**, New York Bldg., St. Paul, CA **$782,663**, c. conc. 9.8 mi. between Newport and TH No. 10, Washington Co. CD 5/16, under LB.

▲ **Babcock & Wilcox Co.**, Beaver Falls, Pa., LB **$4,135,651**, 790,000 lb. per hour steam BOILER for generating power plant at Sheldon Station near Hallam, NEBRASKA. Consumers Public Power Dist., Columbus, Neb. Bids May 7. CD 4/11.

▲† **Massman Constr. Co.**, 3917 Broadway, Kansas City, Mo., LB **$1,211,005** (5 bidders) repair dikes and revetment, Missouri River, Ponca-Upper Sioux City Bends near Ponca, Inv. 25-066-57-107, NEBRASKA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids May 23. CD 5/6.

▲ **TEXAS**—State Hy. Comn., Austin, Bids opened 5/25,

Tex.—**Callan Constr. Co.**, P. O. Box 3146, Waco, Tex., LB **$182,679**, grading, structures, base and surf. 9.254 mi. Hy. FM 1383 & FM 2436 Proj. S. 2175 (1) & S. 2155 (1), Fayette Co.; LB **$137,973**, grading, structures, base and surf. 7.73 mi. Hy. FM 183, Proj. S. 2149 (1), Coryell Co.;

Tex.—**E. B. Darby & Co., Inc. & Trinity Constr. Co., Inc.**, P. O. Box 467, Pharr, Tex., LB **$1,123,375**, c. conc. 6.657 mi. Hy. SH 288 Proj. F 1037 (4), Brazoria Co.; LB **$658,005**, flex. base and b. conc. 16.646 mi. Hy. SH 100 Proj. S. 1911 (1), Cameron Co.;

Tex.—**Gulf Bitulithic Co. & Schwope Engineering Constr. Co.**, P. O. Box 2572, Houston, Tex., LB **$1,281,948** foundation course, c. conc. and b. conc. 2.157 mi. Hy. US 75. Proj. I. 519 (18), Harris Co.;

Tex.—**Henry L. Stafford**, P. O. Box 1047, Lubbock, Tex., LB **$1,086,786**, flex. base and b. conc. 30.868 mi. Hy. SH 51. Proj. S. 1514 (4), Andrews and Ector Counties.;

Tex.—**Schwope Bros. & Schope Eng. Constr. Co.**, 6633 W. Commerce St., San Antonio, Tex., LB **$1,407,960**, flex. base and hot mix b. conc. 17.642 mi. Hy. US 81. Proj. I. 165(16), Webb Co. CD 5/9.

▲ **R. H. Fulton & Co.**, Lubbock, Tex., CA **$1,615,000** natural gas line from Shamrock to Dumas, approx. 105 mi., TEXAS. El Paso Natural Gas Co., Bassett Tower, El Paso, Tex., CD 12/31.

▲ **TEXAS**—State Hy. Comn., Austin, Bids opened May 24,

Tex.—**W. O. Pelphrey**, 1412 Electric Bldg., Fort Worth, Tex., LB **$1,637,209**, flex. base hot-mix b. conc. 9.745 mi. Hy. 81, Proj. I.40 (15), Bell Co.;

Tex.—**C. C. Booth**, P. O. Box 508, Stephenville, Tex., LB $131,604, reconstr. base and surf. 14.039 mi. Hy. FM 2174, Proj. C 137, 7 & 8, 7 & 2, Archer and Clay Counties;

Tex.—**South Texas Constr. Co.**, P. O. Box 3536, Corpus Christi, Tex., LB $576,109, grading, wid'n. structures, foundations, course and b. conc. 6.488 mi. Hy. SH 36 & 35, Proj. 106 (2) & S. 778 (3), Brazoria Co.;

Tex.—**R. B. Butler, Inc.**, P. O. Box 471, Bryan, Tex., LB $199,743, grading, structures and foundation course 4.255 mi. Hy. O.S.R. Proj. C 4752 & 3-19 & 14, Brazos and Madison Counties;

Tex.—**Heldenfels Bros.**, P. O. Box 1917, Corpus Christi, Tex., LB $189,213, b. conc. pavement and flex. base shoulders 10.717 mi. Hy. US 77, Proj. C. 102-4-19 & C. 327-1-9, Kleberg Co.;

Tex.—**Gilvin-Terrill, Inc. & W. W. Braden**, P. O. Box 2268, Amarillo, Tex., LB $1,556,060, c. conc. 1.23 mi. Hy. US 60 & 87, Proj. U 60 (12), Randall Co.;

Tex.—**A. L. Bucy** 804 Avenue I, Brownwood, Tex., LB $94,495, grading, structures, base and surf. 3.611 mi. Hy. FM 2461 Proj. S. 2158 (1), Eastland Co.;

Tex.—**Worth Constr. Co.**, P. O. Box 531, Fort Worth, Tex., LB $97,364, acceleration lanes and ramp changes 1.79 mi. Hy. US 81; Proj. I 473 (16) Tarrant Co.;

Tex.—**Dan Pennington**, P. O. Box 13, Grapeland, Tex. LB $235,393, grading, structures, base and surf. 11.481 mi. Hy. FM 233 & 232, Proj. TFHP 27 (A) Houston and Trinity Counties;

Tex.—**Strain Bros., Inc.**, P. O. Drawer 1631, San Angelo, Tex. LB $336,109, flex. base and hot mix b. conc. 4.199 mi. Hy. US 67. Proj. F. 570 (3), Runnels Co.;

Tex.—**Ivan Demert, Inc.**, P. O. Box 1787, Amarillo, Tex. LB $415,596, grading, structures, base and surf. 13.492 mi. Hy. FM 2272, Projs. S. 2009 (3) & S. 2009, Armstrong Co.; LB $120,774, grading, structures, base and surf. 10.894 mi. Hy. FM 2357. Proj. S. 2165 (1), Hartley Co.;

Tex.—**Wendel Constr. Co.**, P. O. Box 231, El Campo, Tex. LB $303,723, grading, structures, base and surf. 7.737 mi. Hy. FM 1952 Proj. S. 1977 (2), Fort Bend Co.;

Tex.—**Gulf Bitulithic Co.**, P. O. Box 2572, Houston, Tex. LB $1,828,366, flex. base, asph. and c. conc. 2.884 mi. Hy. US 75, Proj. I 519 (19), Harris Co.;

Tex.—**Cage Bros.**, 6959 San Pedro, San Antonia, Tex. LB $1,502,110, flex. base and hot mix b. conc. 9.39 mi. Hy. US 80. Proj. I 444 (41), Taylor Co.;

Tex.—**E. W. Hable & Sons**, P. O. Drawer 650, Corsicana, Tex. LB $678,695, flex. base and 2-course surf. treat. 8.787 mi. Hy. US 79. Proj. F 453 (22), Anderson and Cherokee Counties;

Tex.—**Ivan Dement, Inc.**, P. O. Box 1787, Amarillo, Tex. LB $120,774, grading, structures, base and surf. 10.894 mi. Hy. FM 2357, Proj. S 2165 (1). CD 5/7.

▲† **N. Mortensen & Co.**, 1021 Westlake Ave. N., Seattle, Wash. LB $2,439,941; est. $2,550,165, (6 bidders) frame 890-1410 sq. ft. family housing units, at Glasgow Air Force Base, ENG-45-164-57-40, GLASGOW, MONT. U. S. Eng., City-County Airport Walla Walla, Wash. Bids May 23. CD 4/10.

BUILDINGS—LB & CA

▲ **Henkel Constr. Co.**, 525 9th St. S. E., Mason City, Iowa, LB $1,679,000 (6 bidders) general contract South West JUNIOR HIGH SCHOOL, ALBERT LEA, MINN. Bd. Educ., D. W. Hellie, clk., Albert Lea, Minn. Bids May 23. CD 4/25.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

▲† **W. W. Clyde & Co.**, Springville, Utah. LB $294,606, est. $1,640,617; access roads, streets, utilities for Page, Ariz., Colorado River Storage Proj. in Navajo Indian Reservation, DC 4896, ARIZONA-UTAH. Bureau Reclamation, Dpt. Interior, Kanab, Utah. Bids May 28. CD 4/22.

▲† **General Constr. Co.**, 4850 N.W. Front St., Portland, Ore., CA $1,395,645. replacing outer end of North Jetty pile dikes at Coos Bay, CIVENG-35-026-56-211, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids Apr. 30, awarded May 13. CD 5/6, under LB.

▲† **Green Constr. Co.**, 321 Locust St., Des Moines, Iowa. and **Tecon Corp.**, 1201 Main St., Dallas, Tex. LB $20,572,366 (5 bidders) dam and outlet works, Hills Creek Reservoir, Lane Co., CIVENG 35-026-57-175, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids May 28.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

Griffith Co., 1060 S. Broadway, Los Angeles, Calif. CA $3,161,807. hy. imprvs. 3.6 mi. 6 lane divided freeway on new alignment between State Rte. 174 and 0.2 mi. east of U.S. 101 in cities of Anaheim and Fullerton, Orange Co. (VII-Ora-175-A, Ana, Ful) Bids May 16. CD 5/20, under LB.

▲ **Hyperion Constructors** (Raymond Concrete Pile Co., De Long Corp., Healy-Tibbitts Constr. Co., Peter Kiewit Sons Co., Macco Corp. and Tavares Constr. Co.) 816 West 5th St., Los Angeles, Calif., CA $20,297,530. constr. ocean outfall for sludge t d'sposal at Hyperion Treatment Plant, LOS ANGELES, CALIF., City Council, City Hall, Los Angeles, Calif. Hyperion Engineers (Holmes, Narver, Daniel Mann Johnson and Mendenhall, Koebig & Koebig) c/t owner, Los Angeles, Calif., engrs. Bids May 23, awarded May 24. CD 5/17, under LB.

BUILDINGS—LB & CA

▲ **Younger Bros., Inc.**, 405 Sansome Blvd., San Francisco, Calif., CA Est. $3,000,000. DISTRIBUTION CENTER incl. warehouse, office bldg. and maintenance shop, BURLINGAME, CALIF. Purity Stores Ltd., Kearny and Francisco St., Burlingame, Calif. CD 4/24.

▲ **James I. Barnes Constr. Co.**, 1119 Montana Ave., Santa Monica, Calif., CA $1,727,200, general work FINE ARTS BLDG., INDUSTRIAL ARTS BLDG. and site development at Los Angeles State College of Applied Arts and Sciences, San Bernardino Freeway Campus, LOS ANGELES, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids May 15. Awarded May 22. CD 5/21, under LB;

E. Willardson, Inc., 2880 Rowena Ave., Los Angeles, Calif., CA $504,679. plumbing and heating work (LOS ANGELES, CALIF.)

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES
July 10 Alberta

STREETS AND ROADS
June 12 Ontario

BUILDINGS—BA

▲ **Que., Montreal**—CITY HALL ANNEX—BA 7/10—City, City Hall, 6 story, 98x157 ft., rein.-con., stone, brick, block City Hall Annex, east of present annex, Gosford St. to Bonsecours St. $2,000,000 Plans deposit $200. Crevier, Lemieux & Mercier, 1065 Pratt Ave., archts. Beaulieu, Trudeau, Dubuc, Lalancette & Beaulieu, 5810 Cote St. Luc Rd., engrs. CD 5/31/56.

BUILDINGS—LB & CA

▲ **Perini Ltd.**, 150 Kent St., Ottawa, Ont., LB $7,100,000 (9 bidders) 5 story with 3 wings, 47 x 350 ft. each and 2 wings 47 x 200 ft. each, rein.-con., structural steel, concrete block Public Works Department HEADQUARTERS BLDG. Riverside Dr., OTTAWA, ONT. Dpt. P. Wks., Hunter Bldg. Ottawa, Ont. Bids May 8. CD 3/27.

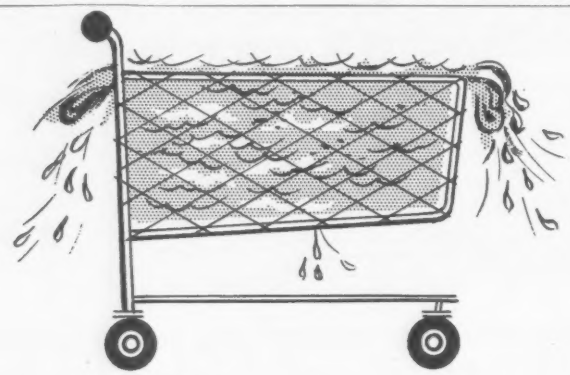
▲ **Perini Ltd.**, 49 Jackes Ave., Toronto, Ont. CA $2,622,850 (8 bidders) underground GARAGE with three sub-levels with rein.-con. flat slab constr., TORONTO, ONT. City City Hall, Toronto, Ont., and Parking Auth. of Toronto, 414 Bay St., Toronto, Ont. Bids May 22. CD 4/30.

▲ **Louis Donolo, Inc.**, 8320 St. Lawrence Blvd., Montreal, Que., CA Over $4,000,000. 17 story, 4 bsmnts., 136 x 157 ft., rein.-con. frame OFFICE BLDG., Guy and Dorchester Sts., MONTREAL, QUE. Monart Corp., c/o Greenspoon, Freedlander & Dunne, archts., 4151 Sherbrooke St., Montreal, Que. Bids Apr. 29, awarded May 21.

▲ **Ross & Anglin Ltd.**, 4400 St. Catherine St. W., Montreal, Que., CA About $1,000,000 (7 bidders) 3 story northeast corner, 3 story northwest corner, 2 story main west portion PLANT EXTEN., MONTREAL, QUE. Ronalds-Federated Ltd., 6306 Park Ave., Montreal, Que. Bids May 17, awarded May 22. CD 5/8.

▲ **Hector Auger Ltee.**, 491 Bonaventur St., Three Rivers, Que., CA Est. $1,000,000. 5 story, bsmnt., 50 x 100 ft. HOSPITAL WING, to contain nursing school, etc. THREE RIVERS, QUE. Rev. Speurs de la Charite de Providence, 773 Ste. Julie St.; Three Rivers, Que. Awarded May 17. CD 1/24.

(Proposal Advertisement see pp. 181 to 184)



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Cement Mixer Takes 60° Grade, one of many Four Wheel Drive tests. In all these grueling tests, Cities Service Lubricants make the grade and then some! They've done it for 20 years.

Early Four Wheel Drive Truck is one of vehicles in firm's museum. Founded in 1910, the company's first production amounted to 12 vehicles. Today, it is thousands yearly.

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If you think things are tough on the trucks at your construction job or quarry, you should visit the Four Wheel Drive plant at Clintonville, Wisconsin.

There you'd see famous Four Wheel Drive trucks going through tests tougher than they'll probably ever meet on your job or anyone else's.

Ditto for the Cities Service Lubricants that Four Wheel Drive uses.

For what could be tougher on a truck and its lubricants than grinding up a hill in loose sand . . . sinking axle deep in a mud bath . . . driving diagonally across a washboard test ground . . . and climbing a 60 degree grade of dirt or gravel?

Make no mistake, Cities Service Lubricants meet the test . . . and have for the past 20 years at Four Wheel Drive Auto Company.

So it stands to reason that however tough the terrain and conditions on *your* job, Cities Service C Series Motor Oils and Trojan H Multi-Purpose Grease will more than make the grade . . . especially if you follow the expert recommendations of your Cities Service Lubrication Engineer.

For all the details, call the nearest Cities Service office, or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, New York.

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Lightning struck twice, setting fire to two storage piles of resin-rich pinewood at this Southern powder plant. For 48 hours it raged out of control. Fire-fighting equipment wet paths as two Koehring 605 cranes moved in with orange-peel buckets—widened fire-breaks, salvaged wood.

Meet the new 405 — In eastern Canada, a city street gets its face "lifted" with a 1-yard, 405 hoe. It's a new size, recently added to the Koehring heavy-duty line — digs 43 inches wide over side-cutters, 22½ feet below grade. Check into its other work capacities at bottom of page.

Here are some figures that will interest you:

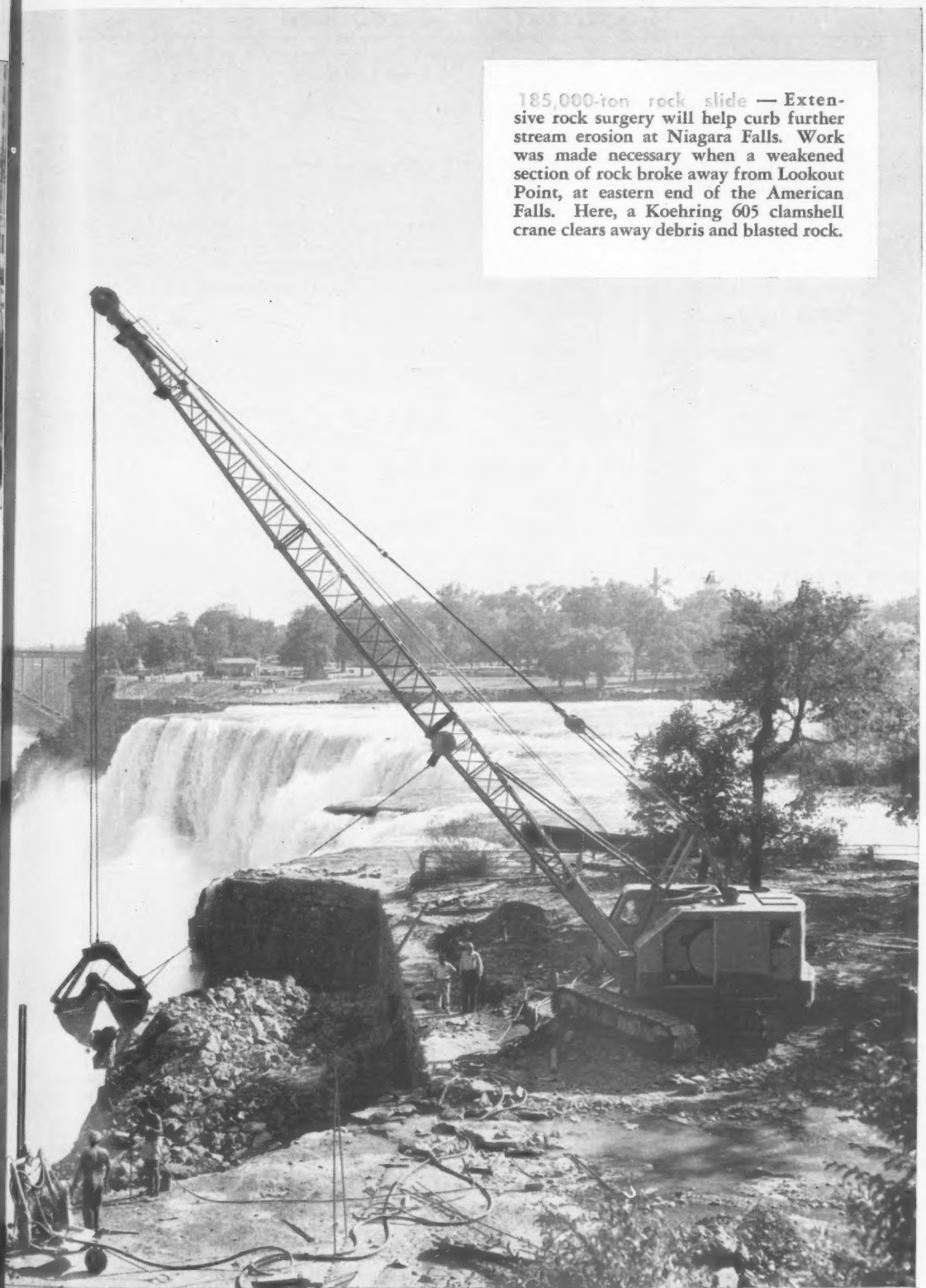
KOEHRING MODEL	SIZE DIPPER	LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load.)	
205 CRAWLER	½-Yd.	20,000 lbs.	at 10-foot radius
205 ON RUBBER	½-Yd.	30,000 lbs. 13,700 lbs.	at 12-foot radius at 20-foot radius
305 CRAWLER	¾-Yd.	30,000 lbs.	at 12-foot radius
305 ON RUBBER	¾-Yd.	50,000 lbs. 15,800 lbs.	at 10-foot radius at 30-foot radius
405 CRAWLER	1-Yd.	40,000 lbs.	at 12-foot radius
605 CRAWLER	1½-Yds.	72,300 lbs.	at 12-foot radius
1205 CRAWLER	3-Yds.	190,000 lbs.	at 13-foot radius

Want more information? Call Koehring distributor today.

10 years on the rock pile — Feeding rock to crusher at a Mid-West quarry, veteran ¾-yard Koehring shovel helps produce 1,000 to 1,500 tons of crushed rock per day. Shovel has been in use for over 10 years. In all this time, owner reports that his repair costs have been practically nil.

K6291

185,000-ton rock slide — Extensive rock surgery will help curb further stream erosion at Niagara Falls. Work was made necessary when a weakened section of rock broke away from Lookout Point, at eastern end of the American Falls. Here, a Koehring 605 clamshell crane clears away debris and blasted rock.

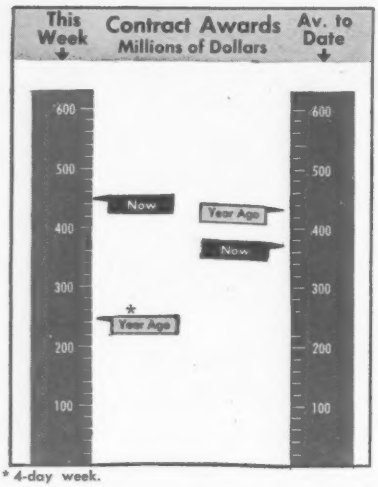


KOEHRING COMPANY Milwaukee 16, Wis.

Subsidiaries: JOHNSON PARSONS • KWIK-MIX

Construction Scoreboard

Activity this Week



* 4-day week.

AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 23 wks 1957	Chge %
	millions		
Federal	$22.5	$1,259.0	+57
State and Municipal	186.7	3,151.9	+13
Total Public	209.2	4,410.9	+23
Total Private	233.5	3,915.9	−39
U. S. Total	$442.7	$8,326.8	−17
By Type of Work			
Waterworks	$1.8	$182.0	+42
Sewerage	31.5	220.7	−20
Bridges	32.0	315.2	+23
Highways	78.3	1,306.6	+25
Earthwork, Waterways	12.2	555.9	+85
Buildings:			
Public, Excl. Housg.	41.8	970.8	+11
Public Housing	1.1	304.9	+76
Private Housing	89.7	1,375.8	−49
Commercial	18.6	764.9	−12
Industrial	118.3	1,549.3	−39
Unclassified	17.4	780.7	−7
U. S. Total	$442.7	$8,326.8	−17

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

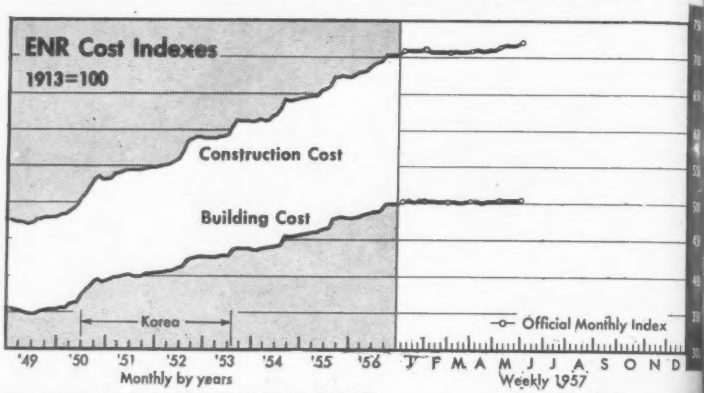
	Week of May 30	Cum. 22 wks 1957	Chge '56-'57 %
	millions		
Corporate Securities	$105.0	$2,638.5	+41
State and Municipal:			
All Except Housing	101.5	2,466.9	+22
Housing	...	41.5	+104
Federal Loans	8.7	100.4	+58
Federal Aid	...	250.0	...
Total Nonfederal	$215.2	$5,497.3	+38
Federal Appropriations:			
In U. S.	...	$0.9	−97
Outside U. S.	...	...	...
Total New Capital	$215.2	$5,498.2	+37

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of May 30 1957	% Change from May 2 1957	% Change from May 1956
Construction Cost	721.36*	+0.8	+4.2
Building Cost	504.17*	+0.2	+3.2

*Official Monthly Index for June 1957

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518



WAGE RATES, 20-cities' average

	June 1957	% Change from May 1957	% Change from June 1956
Common	$2.286	+1.3	+5.4
Skilled (average three building trades)	3.510	+0.6	+4.3
Bricklayers	3.777	+0.7	+3.6
Structural Ironworkers	3.499	+0.6	+5.2
Carpenters	3.254	+0.6	+4.1
Equipment operators (average three types)	3.159*	+1.3**	+4.1

* May ** April

MATERIAL PRICES, 20-cities' average

Structural Steel (average three mills), per cwt	5.00	0	+8.7
Lumber, 2x4 Fir, per M fbm	115.388	−0.1	−5.8
Lumber, 2x4 Pine, per M fbm	101.733	−0.2	−2.1
Cement, bulk, per bbl	3.887	−0.7	+4.9
Sand, per ton	2.450	0	+2.0
Ready-mixed concrete, per cu yd	13.568	0	+3.1
Gypsum sheathing, ½″x2′x8′, per Msf*	62.728	−0.4	+0.2
Fiber board sheathing, ½″ sq. ed, per Msf*	71.739	0	+1.7
Mineral wool insulation, 3′ batts, per Msf*	71.447	−0.4	−1.4
Crushed stone, 1½″, per ton, CL	2.829	+0.4	+2.0
Concrete blocks, sand gravel, 8″x8″x16″, each*	0.226	0	+1.3
	May 1957	April 1957	May 1956
Brick, common, per M	37.425	0	+3.0
Lime, hydrated finishing, per ton, CL	36.299	+0.4	+7.2
Structural clay tile, 3x12x12″, per M, 2,000 up*	178.897	+1.0	+3.4
Vitrified clay sewer pipe, std 12″, per ft	1.323	0	+6.7
Concrete sewer pipe, 12″, per ft	1.154	+0.3	+7.0

*Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost		Building Cost		Volume	
1956	1913 = 100	1949 = 100	1913 = 100	1949 = 100	1913 = 100	1949 = 100
June	692.13	145.09	488.70	138.92	636	184
July	694.75	145.64	489.23	139.07	740	214
Aug	696.31	145.97	491.22	139.63	583	168
Sept	704.91	147.77	500.10	142.16	580	168
Oct	703.88	147.56	499.54	142.00	729	211
Nov	704.13	147.61	500.48	142.27	542	157
Dec	703.82	147.55	500.17	142.18	624	180
1956 Average	**692.37**	**145.14**	**490.76**	**139.50**	**671**	**194**
1957						
Jan	707.90	148.40	501.96	142.69	504	146
Feb	710.06	148.85	502.59	142.87	546	158
Mar	708.64	148.56	501.37	142.52	553	160
Apr	709.30	148.69	501.37	142.52	564	163
May	715.70	150.04	503.01	142.99	553	160
June	721.36	151.22	504.17	143.32	...	...

WANTED! Engineers who can cut costs without sacrificing quality

Who wants them? Just about every corporation, government body and engineering firm faced with today's high construction costs. Hundreds of intended projects need engineers who know how to use more efficient designs and construction methods.

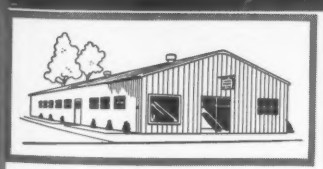
To satisfy this demand, many engineers utilize the Butler Building System for single-story construction. Butler provides a pre-engineered structural and roof system that is precision-made, mass-produced and load-tested to conform with uniform, state and municipal codes.

Assembly is fast and provides clear-span widths to 120 feet in efficient designs that are remarkably low in cost considering their quality and advantages.

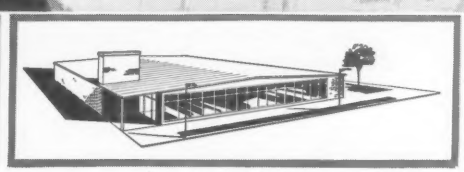
The engineer spends less time and money on routine details—is better able to maintain quality while keeping a tight control over costs—cost of the basic structure . . . cost of installing heating, lighting, cooling and ventilating units . . . and cost of exterior and interior finishing.

For the full story

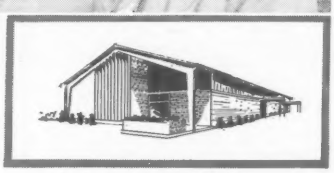
on the lowest cost way to build well, consult with your Butler Builder. He'll explain how he can cooperate with you on your building projects. He's listed under "Buildings" or "Steel Buildings" in the Yellow Pages. Or write us direct.



All-metal Butler



New low-profile Butler



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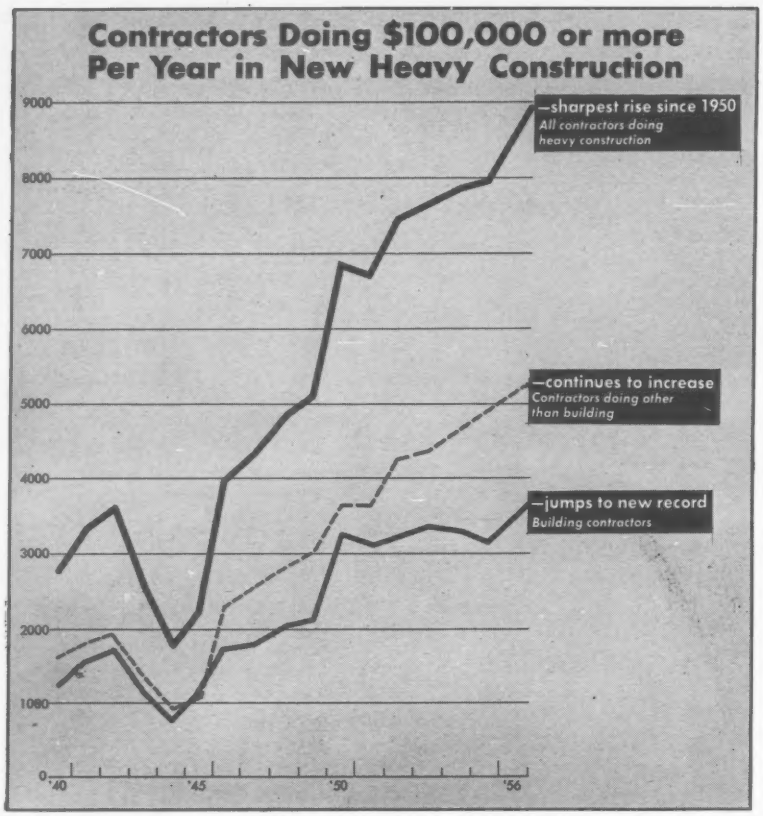
Number of Contractors Sets Record



A $14.7 billion beehive of contract construction business last year brought out contractors in swarms. There were more contractors—of all sizes in both building and other than building work last year than ever before, according to an ENGINEERING NEWS-RECORD-CONSTRUCTION DAILY analysis of 8,941 firms that signed up $100,000 or more in new business in 1956. This total is up 12% over 1955.

A record for the number of building contractors was established after five years of comparative stability. The ranks of building contractors swelled with a sudden 16% increase in the number of firms competing for the unusually heavy volume of industrial, commercial, schools and other building projects.

Industrial building was particularly active. A 70% jump in industrial building business brought with it a 25% increase in the number of contractors doing this type of work.

The number of contractors signing up $100,000 or more in new business for heavy construction other than building rose faster in 1956 than the number of projects available or the dollar value of the work. Here there were 9% more contractors, but the number of projects was up only 1% and the dollar value, up 8%.

In heavy construction, other than building, highway contractors are the largest group, and they're still growing.

Contractor New Business by Size of Firm—1956 Compared With 1955

Reported by Engineering News-Record and Construction Daily

	Firms with $1,000,000 or More in Construction Contracts						Firms with $500,000–$1,000,000 in Construction Contracts						Firms with $100,000–$500,000 in Construction Contracts					
	Number of				Contract Value (millions)		Number of				Contract Value (millions)		Number of				Contract Value (millions)	
	Contractors		Projects				Contractors		Projects				Contractors		Projects			
Type of Work	1956	% Chg. fr '55	1956	% Chg. fr '55	1956	% Chg. fr '55	1956	% Chg. fr '55	1956	% Chg. fr '55	1956	% Chg. fr '55	1956	% Chg. fr '55	1956	% Chg. fr '55	1956	% Chg. fr '55
TOTAL	2,896	+15	9,002	+ 1	$12,391	+26	1,867	+20	3,691	+12	$1,240	+14	4,178	+ 7	5,487	+ 3	$1,112	+ 9
Total-Other-than-Building	1,434	+16	5,172	− 3	4,527	+ 8	989	+11	2,543	+ 7	668	+ 5	2,856	+ 6	4,081	+ 1	706	+ 8
Waterworks	215	a	376	− 7	212	+ 6	125	+17	197	+ 1	43	+13	371	+ 4	483	+ 5	68	+11
Sewerage	270	+16	440	− 3	333	+53	174	+10	305	+ 4	75	+ 9	502	+ 1	534	−11	106	+ 5
Bridges	346	+15	488	− 3	402	+ 5	138	+12	238	+18	58	−22	315	+22	396	+23	63	+17
Streets and roads	805	+14	2,584	+ 1	1,558	+ 9	518	+ 7	1,256	+ 7	312	+ 5	1,187	+ 6	1,694	+ 4	277	+ 5
Earthwork & waterways	304	+24	447	+20	852	+32	91	+18	172	+38	46	+64	242	+ 7	308	+17	44	+16
Airports	361	+ 3	481	−25	500	− 6	117	−16	174	−18	64	− 7	301	− 6	337	− 6	68	+ 1
Unclassified	279	+ 1	356	− 3	470	−21	151	+16	201	+10	70	+ 8	391	+ 6	329	−16	80	+16
Federal (incl. above)	554	+ 9	931	− 3	979	+16	244	+15	178	−48	60	−50	529	− 3	625	+ 1	114	+ 2
Total-Building	1,462	+14	3,830	+ 7	8,064	+38	878	+33	1,148	+24	572	+28	1,322	+ 9	1,406	+ 9	406	+11
Industrial	654	+32	1,239	+34	4,003	+73	215	+41	283	+31	89	+35	540	+12	611	+11	118	+19
Mass housing, commercial, public	1,277	+14	2,591	− 2	4,061	+15	761	+31	870	+23	483	+26	816	+ 9	795	+ 8	287	+ 7
Federal (incl. above)	133	+28	168	+40	300	−13	41	+52	45	+25	25	+47	64	+10	66	+10	16	− 6

a less than 0.5%

They increased 8% in 1956, topping the 2,500 mark for the first time. Their new business also climbed 8% in dollar value, although the number of projects was up only 3%.

Second largest number of heavy construction contractors was on sewerage, where there were 946 firms that booked $100,000 or more in new contracts last year. This was 7% more than the figure recorded for 1955.

But, the largest increases in the number of firms winning contracts for heavy construction other than building came on earthwork and waterways (up 16%) and bridge work (up 17%).

• **More million dollar firms**—Ranks of the million dollar and half million dollar contractors are growing more rapidly than the smaller firms ($100,000 to $500,000). And a 15% increase in the number of million dollar contractors means that nearly one third of the firms covered in the ENR-CD analysis now are in the top business category.

While the smaller contracting firm ($100,000 to $500,000 in new business) continues to lead the field numerically with 4,178 firms, it accounts for a decreasing proportion of the total number of firms in the field. In 1956, for example, the smaller firms accounted for 46.7% of the total as against 49% in 1955.

Many firms missing from this smaller contractor category are showing up in higher brackets. This probably accounts for the fact that the medium size firm ($500,000 to $1 million) became more important last year. This category showed the biggest increase in number of firms (up 20% over 1955) and accounted for nearly 21% of the total number of contractors in the $100,000-and-up new business category.

While both the small and medium size firms received a smaller share of the total dollar volume of contracts last year than in 1955, the medium size firms did pick up a higher percentage of jobs, chiefly on building, and principally at the expense of the million dollar contractors.

• **More work, more competition**—The latest ENR-CD analysis points up a long-term trend: As the volume of contract construction gets bigger, more and more new firms are attracted to the field. Today, there are more than five times as many contractors competing for construction contracts both on buildings and other heavy construction than there were during the low point of the mid-1940s.

Moreover, the big contractors have increased at a faster clip than their smaller competitors. Since the low of 108 in 1945, the number of million dollar other than building contractors has increased to 1,434, for example. This is an increase of 1,228%. And, the number of million dollar building contractors jumped from 148 in 1944 to 1,462 last year, which is an increase of 888%.

(*Continued on page 174*)

How 8,941 Contractors with $100,000 or More in Contracts Divided 18,180 Projects Costing $14.7 Billion in 1956

Reported by Engineering News-Record and Construction Daily

Type of Work	Number of Contractors 1956	Contractors % Change from 1955	Number of Projects 1956	Projects % Change from 1955	Contract Value (millions) 1956	Contract Value (millions) % Change from 1955
TOTAL	**8,941**	**+12**	**18,180**	**+ 4**	**$14,743**	**+23**
Total—Other than Building	5,279	+ 9	11,796	+ 1	5,701	+ 8
Waterworks	711	+ 5	1,056	a	323	+ 8
Sewerage	946	+ 7	1,279	− 5	513	+33
Bridges	799	+17	1,122	+ 9	523	+ 3
Streets and roads	2,510	+ 8	5,534	+ 3	2,148	+ 8
Earthwork & waterways	637	+16	927	+22	942	+ 33
Airports	779	− 4	992	−18	632	− 5
Unclassified (all other)	821	+ 6	886	− 6	620	−15
Federal (ind. above)	1,327	+ 5	1,734	− 9	1,153	+ 7
Total—Building	3,662	+16	6,384	+10	9,042	+36
Industrial	1,409	+25	2,133	+26	4,210	+70
Mass housng commerical, public	2,854	+16	4,256	+ 4	4,832	+16
Federal (incl. above)	238	+26	279	+29	341	− 9

a less than 0.5%.

Contractor New Business, by Size of Firm, 1951-1956

Based on contracts reported by Engineering News-Record and Construction Daily

Size of contractor based on value of contracts	Contractors, Projects, and Value of Contracts 1956	1955	1954	1953	1952	1951	Percentage Distribution 1956	1955	1954	1953	1952	1951
TOTAL-ALL Groups												
Contractors-number	8,941	7,986	7,833	7,664	7,420	6,737	100.0	100.0	100.0	100.0	100.0	100.0
Projects-number	18,180	17,511	17,493	16,523	15,380	13,856	100.0	100.0	100.0	100.0	100.0	100.0
Contracts-value (mil)	$14,743	$11,939	$ 9,875	$10,870	$10,687	$ 9,571	100.0	100.0	100.0	100.0	100.0	100.0
$1,000,000 or more												
Contractors-number	2,896	2,518	2,260	2,184	2,112	1,980	32.5	31.6	28.9	28.5	28.5	28.3
Projects-number	9,002	8,890	8,150	7,490	6,791	6,088	49.5	50.8	46.6	45.3	44.2	43.9
Contracts-value (mil)	$12,391	$ 9,834	$ 7,774	$ 8,839	$ 8,751	$ 7,747	84.1	82.4	78.7	81.3	81.9	80.9
$500,000–$1,000,000												
Contractors-number	1,867	1,555	1,526	1,453	1,448	1,306	20.9	19.4	19.5	19.0	19.5	19.4
Projects-number	3,691	3,303	3,452	3,215	3,087	2,697	20.3	18.9	19.7	19.5	20.1	19.5
Contracts-value (mil)	$ 1,240	$ 1,087	$ 1,039	$ 999	$ 953	$ 889	8.4	9.1	10.5	9.2	8.9	9.3
$100,000–$500,000												
Contractors-number	4,178	3,913	4,047	4,027	3,860	3,523	46.7	49.0	51.6	52.5	52.0	52.3
Projects-number	5,487	5,318	5,891	5,818	5,502	5,071	30.2	30.3	33.7	35.2	35.8	36.6
Contracts-value (mil)	$ 1,112	$ 1,019	$ 1,063	$ 1,032	$ 983	$ 935	7.5	8.5	7.6	9.5	9.2	9.8

How Contractors Doing $100,000 or More New Construction Per Year Increased from 1940-1956

Based on contracts reported by Engineering News-Record and Construction Daily

	Other Than Building Construction — Size				Building Construction — Size				
	$1,000,000 & over	$500,000-$1,000,000	$100,000-$500,000	Total	$1,000,000 & over	$500,000-$1,000,000	$100,000-$500,000	Total	Grand Total
1940	165	213	1,160	1,538	310	178	711	1,199	2,737
1941	290	247	1,257	1,804	429	239	868	1,536	3,340
1942	418	417	1,074	1,909	617	404	693	1,714	3,623
1943	213	219	928	1,360	302	241	621	1,164	2,524
1944	124	128	734	986	148	98	482	728	1,714
1945	108	145	843	1,096	207	163	747	1,117	2,213
1946	326	434	1,511	2,271	333	290	1,090	1,713	3,984
1947	360	461	1,688	2,509	398	330	1,067	1,795	4,304
1948	473	529	1,806	2,808	534	398	1,079	2,011	4,819
1949	444	532	2,049	3,025	615	484	1,000	2,099	5,124
1950	716	629	2,313	3,658	1,061	684	1,483	3,228	6,886
1951	851	653	2,132	3,636	1,057	653	1,391	3,101	6,737
1952	985	760	2,464	4,209	1,127	688	1,396	3,211	7,420
1953	1,035	746	2,537	4,318	1,149	707	1,490	3,346	7,664
1954	1,064	840	2,646	4,550	1,196	686	1,401	3,283	7,833
1955	1,234	893	2,703	4,830	1,284	662	1,210	3,156	7,986
1956	1,434	989	2,856	5,279	1,462	878	1,322	3,662	8,941

Hefty gains also were scored by the medium size firms ($500,000 to $1 million). Other than building contractors increased 673% from 1944 to 1956, from 128 to 989. In the same period, building contractors ranks swelled by 796% from 98 to 878.

This doesn't mean that the smaller heavy construction contractor has disappeared even during this period of phenomenal construction volume. The expansion of the smaller contractors' ranks ($100,000 to $500,000) appears modest only by comparison with the bigger firms. For example, the number of of smaller contractors in heavy construction other than building jumped 289% from 1944 to 1956 (from 734 to 2,856) and building contractors increased 174% in the same period (from 482 to 1,322).

All along the line, it is obvious that contractors now have more work than before and have much more competition for that work. But, the rate at which the smaller firms continue to get bigger also indicates that even with increased competition, there is also opportunity.

These 8,941 top rank contractors come from every state in the union. California accounts for 1,007, Texas for 849, New York for 578. Illinois and Ohio are close with 567 and 563. Pennsylvania is next with 506, then Michigan with 459.

On buildings, the top count by states lines up in this order: California 496, Texas 372, Pennsylvania 256, Illinois 251, Ohio 246, New York 233, New Jersey 201, Massachusetts 200.

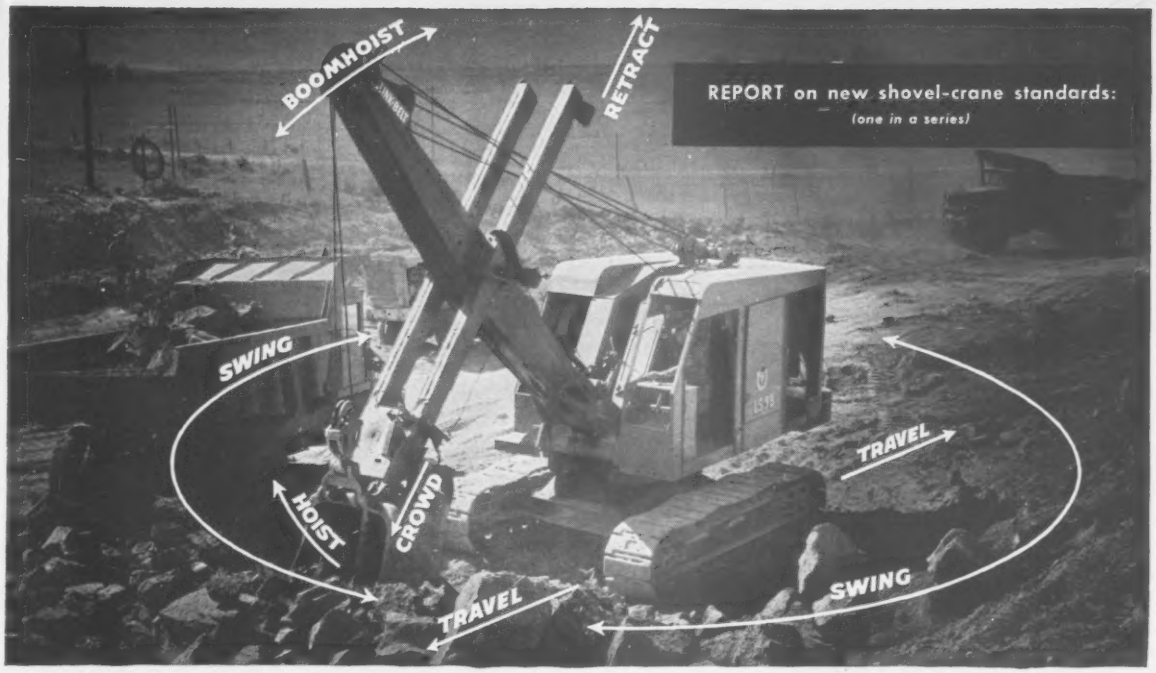
On other heavy construction this is the state line-up: California 511, Texas 477, New York 345, Ohio 317, Illinois 316, Michigan 276, Washington 268, Pennsylvania 250, Florida 218.

(*B&F continued on page 176*)

Contractor New Business, by Type of Contractor and Size of Firm, 1956, 1954, 1952

As reported by Engineering News-Record and Construction Daily

Size of Contractor Based on Value of Contracts	Contractors, Projects, and Value of Contracts			Percentage Distribution		
	1956	1954	1952	1956	1954	1952
Total-Other-than-Building						
Contractors-number	5,279	4,550	4,209	100.0	100.0	100.0
Projects-number	11,796	11,502	10,082	100.0	100.0	100.0
Contracts-value (mil)	$5,701	$4,254	$3,606	100.0	100.0	100.0
$1,000,000 or more						
Contractors-number	1,434	1,064	985	27.2	23.4	23.4
Projects-number	5,172	4,752	4,073	43.8	41.3	40.4
Contracts-value (mil)	$4,327	$3,052	$2,528	75.9	71.7	70.1
$500,000–$1,000,000						
Contracts-number	989	840	760	17.8	18.5	18.1
Projects-number	2,543	2,406	2,059	21.6	20.9	20.4
Contractors-value (mil)	$668	$570	$496	11.7	13.4	13.8
$100,000–$500,000						
Contractors-number	2,856	2,646	2,464	54.1	58.1	58.5
Projects-number	4,081	4,344	3,950	34.6	37.8	39.2
Contractors-value (mil)	$706	$632	$582	12.4	14.9	16.1
Total-Building						
Contractors-number	3,662	3,283	3,211	100.0	100.0	100.0
Projects-number	6,384	5,991	5,298	100.0	100.0	100.0
Contractors-value (mil)	$9,042	$5,621	$7,081	100.0	100.0	100.0
$1,000,000 or more						
Contractors-number	1,462	1,196	1,127	39.9	36.4	35.1
Projects-number	3,830	3,398	2,718	60.0	56.7	51.3
Contracts-value (mil)	$8,064	$4,722	$6,223	89.2	84.0	87.9
$500,000–$1,000,000						
Contractors-number	878	686	688	24.0	20.9	21.4
Projects-number	1,148	1,046	1,028	18.0	17.5	19.4
Contracts-value (mil)	$572	$469	$457	6.3	8.3	6.4
$100,000–$500,000						
Contractors-number	1,322	1,401	1,396	36.1	42.7	43.5
Projects-number	1,406	1,547	1,552	22.0	25.8	29.3
Contracts-value (mil)	$406	$430	$401	4.5	7.7	5.7



ALL OPERATIONS ARE COMPLETELY INDEPENDENT — In addition to eliminating shifting time, *Independent-Travel* allows the operator to swing and hoist the load while travelling. Whether to save time or to jockey the boom around obstacles, the operator can swing the boom while his machine is travelling in either direction. This optional feature can be used with any front-end attachment.

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Liberal bill goes to conference . . .

New Housing Law Coming

A new housing law to help bolster the hard-hit homebuilding industry will go to the White House for the President's signature this month.

That was the outlook in Washington last week as the Senate voted an amended bill which does not depart too drastically from the measure sent to it by the House. The Senate made minor changes in the House schedule of lower FHA down payments. And it slashed authorization figures in a big way that won headlines but won't weaken government support of housing programs in the year ahead.

House-Senate conferees hope to reach quick agreement on differences between the two versions. Their work is made easier by the fact that neither version proposes any change in the existing authorization of 35,000 new public housing units for next year. The Senate went along with the House by beating down all attempts to step up next year's figure and to authorize a larger number for years beyond fiscal 1958. That issue will be taken up in the next session.

Lower down payments on properties purchased with FHA-insured mortgages are assured by action of the two houses. Both versions make substantial cuts in present requirements of 5% on the first $9,000 of appraised value plus 25% of the excess, but they make no change in the maximum FHA mortgage amount of $20,000. Both aim to make purchase easier for houses in the lower and middle price range.

Of the two, the Senate schedule is more liberal. It would reduce minimum down payment requirements to 3% of the first $10,000 of house value, 10% of the next $6,000, and 30% of the excess. The House bill would set the minimums at 3%, 15% and 30% for the same brackets.

By comparison with present law, both the House and Senate would lower down payment requirements for a $10,000 single-family home from $700 to $300; for a $16,000 house, from $2,200 to $1,200 (House schedule) and $900 (Senate); for a $22,000 house, from $3,700 to $3,000 (House) and $2,700 (Senate). When the value of the property goes up to $25,000, the FHA mortgage maximum of $20,000 establishes the down-payment requirement, which would remain at $5,000.

With the GI home loan program for World War II veterans due to expire next year, homebuilders say lower FHA down payments are essential to maintain the volume of new home sales. The builders rejoiced last week when the Senate by floor amendment added the low downpayment schedule to the bill. The Senate Banking Committee had stripped all downpayment provisions from the amended House measure it reported for floor action.

Largely responsible for the committee decision to bypass downpayment changes was the general opinion that these requirements had little to do with the slump in new home starts. Shortage of mortgage money was the real culprit, committee members said. Backing up that opinion, the group approved large money authorizations for the Federal National Mortgage Association (Fannie Mae) to buy government-backed mortgages in general and support special housing programs in particular.

The Senate trimmed some of these recommendations to make it spectacular paper saving. On some items, the cuts are real, but the biggest involve only bookkeeping reductions to keep large sums from showing up in the federal budget.

A prime example is Fannie Mae's authority to borrow from the Treasury for purchase of FHA and VA mortgages. Actually, Fannie Mae raises the required funds by sale of short-term debentures on the open market and calls on the Treasury only for interim financing that rarely exceeds $100 million. The Senate limited the increase in the agency's Treasury borrowing authority to $350 million (for a new total of $1.7 billion).

More important to homebuilding, however, is the fact that the Senate approved a $550 million increase in Fannie Mae's FHA and VA mortgage buying authority, $50 million to come from sale of preferred stock to the Treasury and $500 million from issues of debentures. A much greater increase would be authorized by the House bill, which calls for $125 million in preferred stock and $1.25 billion in other borrowing. As the House measure would back up the $1.25 billion with authority to borrow the full amount from the Treaury if necessary, the Senate could claim a big reduction of $900 million in this contingent liability.

Conferees can come up with nothing less than the $550 million approved by the Senate for increased Fannie Mae authority to buy FHA and VA mortgages in its secondary market operation. Special assistance programs that the agency helps to finance through advance commitments and mortgage purchases will also get more money.

General assistance funds that the President allocates to such special uses as urban renewal and disaster housing will be stepped up $250 million, as approved by both houses. Of this amount for mortgage purchases, $150 million comes from new authority and $100 million from transfer of previously authorized funds that have not been used.

Urban renewal is sure to get an increase. College housing loans likewise will be given a boost.

Awards Up Slightly in May

Sparked by public works contracts, heavy construction contract awards, as reported by ENGINEERING NEWS-RECORD and CONSTRUCTION DAILY, rose slightly in May. The weekly average last onth was $371 million. It compared with April's $365 million per week and was the highest rate of awards thus far in 1957.

Despite the modest increase in May, contracts were 12% below the year ago pace and also were under the May 1955 volume.

For the first five months of this year, heavy construction contracts total about $7.9 billion, 19% less than the record volume reported in the comparable 1956 period. However, it is the second highest volume on record for this period.

• **Public works boom**—Federal, state and municipal construction turned in a booming volume of awards in May. Federal contracts were almost half again as big in May as they were in April (measured in terms of weekly volume), although such awards failed to match the unusually high March rate.

Thus far in 1957, federal construction contracts have spurted 60% above the year ago volume to $1.2 billion. This is a new five month record for federal work—by a wide margin.

State and municipal contracts reached the highest weekly average to date this year—$142 million. Mainsprings of this activity were highways, waterworks and sewerage contracts.

• **Private work drops**—In contrast to the strength of public works last month, private heavy construction faltered. After beginning a brisk upturn in mid-April, private awards weakened and

were shaky during May. Contract activity was marked by irregular highs and lows during the month, averaging out at $161 million a week, down 12% from the weekly average in May.

Weakness in the private construction field was concentrated in the commercial and industrial building sectors. Mass housing showed only a slight dip. Private unclassified projects actually gained during the month, but the volume was mediocre.

At the end of the first five months, all major types of private construction are running well behind last year. Commercial building is holding up the best, but even that is down 11%. An encouraging note is that the volume of commercial building projects in the planning stage points to a narrowing of this gap. By the time the year is finished, the commercial building total may well top last year.

But the real millstones hanging around the neck of private construction these days are industrial building, mass housing and unclassified. Industrial building is 43% below last year; mass housing is off 51% and unclassified construction is down 30%.

• **Schools, military housing strong**—While building contracts admittedly are not getting as much new business this year as last, the substantial rise in available public work is removing much of the sting.

Sparked by a record volume of school construction, public non-residential building is 10% higher than during the first five months of last year. And the Capehart military rental housing program now is moving along at a fair clip after a "temporary freeze" earlier this year was thawed on April 1. This program is responsible for an 81% jump in public housing contracts this year.

For heavy construction other than building, business continues to boom. Awards for highways, waterworks, sewerage and waste disposal, dams, river and harbor work, public hydro power and other types of work included in this field are running 16% above last year—the previous high.

Earthwork, irrigation and drainage has scored the largest 1956-1957 gain in the field of heavy construction other than building. For the first five months, it is 83% above last year's volume.

This 83% increase is noteworthy because it comes on top of annual increases of 34% in 1956 and 61% in 1955. This year's total includes some history-making awards, such as the largest single dam contract ever awarded by the Bureau of Reclamation, $108 million for Glen Canyon Dam.

Highway contracts are burning up the road, running 23% ahead of last year's record; bridge contracts for the first five months are 20% above 1956.

Waterworks contracts were boosted in May by two awards for New York City's water system. They totaled $45.4 million. At the end of five months, waterworks contracts are 43% above last year.

Wage Increases Push Costs Up Six Points in Month

Scattered wage increases in six cities more than offset lumber price dips in two cities and a portland cement price cut in one to push the ENGINEERING NEWS-RECORD 20-Cities Construction Cost Index up nearly six points. The June index value is 721.36 (based on 1913 = 100). The index rose 0.8% in one month.

ENR's Building Cost Index moved up more slowly. It advanced slightly more than a point, for an increase of 0.2%. The latest reading is 504.17, also based on 1913 = 100.

Wage increases this month ranged from eight to 20 cents an hour. Rates for common laborers on building and heavy construction went up in four cities: Chicago, 20 cents; Detroit, 8 cents; Minneapolis, 15 cents; and San Francisco, 18 cents.

Higher wage rates for skilled trades were posted in five cities; bricklayers, 20 cents in Boston, 18 cents in Detroit and 15 cents in Minneapolis; carpenters, 20 cents in Chicago and 15 cents in Minneapolis; structural ironworkers, 15 cents in Baltimore, Detroit and Minneapolis.

Lumber prices were lower by $1 to $2 per Mftbm in New York and Boston. Portland cement prices were cut by 27 cents a barrel in Minneapolis because of lower freight rates.

Both the ENR Building and Construction Cost Indexes hit new highs.

Engineering Construction Contracts—May '57

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $44,000; *other public works,* $73,000; *industrial buildings,* $93,000; *other buildings,* $344,000.

Five Weeks Thousands of Dollars (000 Omitted)

	May, 1957							U. S. Cumulative Five Months		% Change	Canada May
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1957	1956	'56 to '57	1957
Public Works											
Waterworks	1,901	47,931	747	14,392	7,737	4,283	76,991	180,338	125,671	+43	636
Sewerage	3,813	8,637	5,890	12,669	14,106	8,017	53,132	189,195	273,478	−31	1,307
Bridges	1,082	8,170	5,267	15,325	9,617	3,767	43,228	282,157	235,245	+20	3,852
Earthwork and waterways	9,401	11,852	5,125	2,457	22,436	144,989	196,260	543,826	293,411	+85	6,294
Streets and roads	25,620	32,010	49,918	62,435	86,686	48,631	305,300	1,228,311	997,471	+23	22,133
Public buildings, residential	17,106	8,042	21,683	867	11,238	13,934	72,870	303,640	167,893	+81	6,680
Other public buildings	23,446	27,762	33,900	44,266	41,839	29,907	201,120	928,801	843,194	+10	15,096
Unclassified	6,619	12,871	17,553	3,458	42,661	21,474	104,636	545,526	507,544	+ 7	8,823
Total public	88,988	157,275	140,083	155,869	236,320	275,002	1,053,537	4,201,794	3,443,907	+22	64,821
Federal government (included in above classifications)	30,396	28,099	35,784	6,155	71,723	169,128	341,285	1,236,487	771,254	+60	12,823
Private											
Bridges								1,220	2,679	−54	
Industrial buildings	4,588	150,262	13,616	62,754	41,130	17,129	289,479	1,430,931	2,518,715	−43	20,345
Mass housing	24,019	162,885	5,166	56,442	32,154	26,755	307,421	1,286,217	2,625,480	−51	17,287
Commercial buildings	7,697	51,641	6,441	42,765	52,788	11,714	173,046	746,448	842,066	−11	11,709
Unclassified	200	198	706	12,880	8,805	10,459	33,248	217,567	308,886	−30	73,519
Total private	36,504	364,986	25,929	174,841	134,877	66,057	803,194	3,682,333	6,297,826	−42	122,860
Total Engineering Construction:											
May, 1957 — 5 weeks	125,492	522,261	166,012	330,710	371,197	341,059	1,856,731				187,681
April, 1957—4 weeks	121,978	397,619	169,409	296,418	267,845	206,850	1,460,119				164,879
May, 1956—5 weeks	95,568	582,021	203,993	534,631	369,868	333,689	2,119,770				183,385
Five Months—1957	507,155	2,012,192	919,748	1,544,131	1,460,902	1,440,049		7,884,177		−19	745,025
Five Months—1956	543,248	2,788,656	917,879	2,024,035	2,102,962	1,364,953			9,741,733		810,375
% Change '56 to '57	−7	−28	+0.2	−24	−31	+6					−8

New Roadbuilding Pacts Signed

Two Rhode Island trades sign three-year contracts, while California adds to its five-year agreements

Contract settlements brought an end last week to a Rhode Island carpenters' strike that had tied up more than $32 million worth of bridge construction, and added two more big five-year contracts to those already scored in California.

The Rhode Island road pacts between union carpenters and Associated General Contractors in Providence on the one hand, and operating engineers and Rhode Island Road Builders Association on the other, will run for three years, giving carpenters a 60 cent wage boost for the period and heavy road equipment operators in the engineers' union $30 more a week in increments of $10 a year.

By May 22, 1959, the carpenters' rate—now $2.72½—will climb to $3.32½ an hour. Straight-time rate for shovel men under the operating engineers' agreement will be $158 a week—the highest pay for any building tradesmen in the state. Maintenance men and bulldozer, grader, spreader, scraper and loader operators will get less—a boost of $23 a week in installments of $7, $8 and $8. Under the Road Builders' pact, old work can be continued at former rates until July 1.

• **Five-year pacts**—In California, the carpenters settled, subject to union ratification, on a five-year basis with four southern contractor groups—AGC, Building Contractors Association, Home Builders Institute and Engineering and Grading Contractors Association. The contract, containing a reopening clause effective after two years, grants a 22½ cent hourly wage increase June 15 and 15 cents more next year, plus a 10 cent employer contribution to a pension fund.

Some 2,000 cement masons in 46 northern California counties also settled for a five-year contract on substantially the same basis with the northern California chapters of AGC. The 22½ cent boost becomes effective this week, with another 15 cents next year. Subsistence pay is upped $3 a day and a 10 cent pension contribution will start January 1. The reopener, effective after the second year, applies to basic wages and welfare payments only.

• **Other areas**—Elsewhere, among the more significant contracts concluded is one between the Home Builders Association of Philadelphia and Suburbs, and the Building and Construction Trades Council of Philadelphia and Vicinity.

Covering 12,000 construction workers in 26 homebuilding trades (but not including carpenters who have pulled out of the council), the contract runs for three years and grants a total hourly wage increase of 30 cents in three installments. Old contract had expired April 29 but the workers had agreed to stay on the job for another month of negotiations.

In Ohio, Toledo plumbers have won the biggest increase of all the trades—25 cents an hour (15 now and 10 on November 1). Foremen get an additional 25 cent boost and area foremen 50 cents. New hourly rate for journeymen will be $3.55. Most of the other trades settled for 22 cents in installments of 17 now and 5 in November.

Lorain County, Ohio, laborers have ended a 22-day strike with a two-year contract that grants a 20 cent wage boost each year, and plumbers and pipefitters in Trumbull County have agreed to a 23½ cent increase—17½ now and 6 in November.

Safety Promoters Face Big Task

With accident costs of $125 million a year, New York construction industry sees need for new approach

During the three years 1953 through 1955, 47,000 construction workers in the State of New York were injured seriously enough to receive workmen's compensation; 17,000 were permanently disabled; nearly 500 were killed. Direct cost in compensation was $57 million; total estimated cost to the industry was $375 million, or $125 million a year.

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At the same time, an extensive training course for the Labor Department's construction safety consultants has been developed in cooperation with Cornell University. The men so trained will spearhead the state's new safety promotion technique, which utilizes all forms of accident prevention rather than law enforcement alone.

• **Challenge**—Scope of the problem is dramatized by the statistical study, which was based on construction industry compensation cases within the state during 1953-55. Among the findings are these:

• The industry's accident frequency rate in New York was 69 per 1,000 workers. National average was 59.

• Employees of contractors in building construction (inclusive of special trade contractors) were injured more frequently than employees of general contractors other than building. But in the building construction group, the average injury was less serious.

• Workers in demolition and wrecking had the highest accident frequency rate—83.7 injuries per 500 workers, or one in every six. Structural and ornamental erection, installation of equipment and machinery, and roofing, sheet metal and concrete work all had an injury frequency rate higher than a 29 per 500 average for specialty trades. Lowest in specialty trades was in electrical work—24 per 500.

• Average duration of compensation for workers injured in building construction was 52 weeks; for those in

nonbuilding it was 58. Trades with lowest accident frequency rates—painters and paperhangers and those in general building maintenance—had the most serious accidents and the longest compensation payment periods—82.7 and 70.2 weeks respectively.

• Nearly three-fourths of the accidents resulted from being struck by falling, flying, sliding, or moving objects; from slips (as opposed to falls) and overexertion; and from falling from one level to another, as from a scaffold or ladder.

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AFL-CIO moves against trade union corruption

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Approved at the federation's Executive Council meeting which convened May 20, the codes spell out for the benefit of AFL-CIO affiliates and rank-and-file members the federation's concept of trade union democracy and financial honesty. Both codes set forth minimum standards of conduct. They are the latest in a series of edicts aimed at elimination of union corruption, and would have prevented many of the abuses contained in recent AFL-CIO charges against teamster President Dave Beck.

The responsibility of union members to participate actively in union affairs—and their right to do it freely—is emphasized in the code on democratic processes. And a number of interrelated provisions on the conduct of elections, the holding of meetings and conventions and the terms of union officials are included as a deterrent to boss rule by an unscrupulous minority.

Most of the financial practices code is directed at misuse of union funds by unions or union officials. Among the prohibitions are loans to businesses with which the union bargains collectively; personal loans to officers for financing private business or investment; and sales or purchases that give personal profit or advantage to union officials.

National and international unions are directed to take whatever action is necessary to assure compliance with the codes. And to forestall a charge that the codes violate union autonomy, the Executive Council has pointed out that each union at the AFL-CIO merger convention in 1955 "clearly accepted the responsibility of keeping its own house in order". Under the principle of autonomy, each AFL-CIO affiliate has the right to regulate its own affairs.

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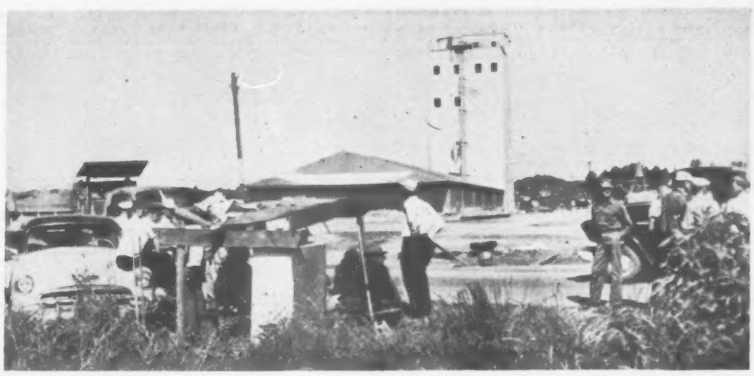

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New Roadbuilding Pacts Signed

Two Rhode Island trades sign three-year contracts, while California adds to its five-year agreements

Contract settlements brought an end last week to a Rhode Island carpenters' strike that had tied up more than $32 million worth of bridge construction, and added two more big five-year contracts to those already scored in California.

The Rhode Island road pacts between union carpenters and Associated General Contractors in Providence on the one hand, and operating engineers and Rhode Island Road Builders Association on the other, will run for three years, giving carpenters a 60 cent wage boost for the period and heavy road equipment operators in the engineers' union $30 more a week in increments of $10 a year.

By May 22, 1959, the carpenters' rate—now $2.72½—will climb to $3.32½ an hour. Straight-time rate for shovel men under the operating engineers' agreement will be $158 a week—the highest pay for any building tradesmen in the state. Maintenance men and bulldozer, grader, spreader, scraper and loader operators will get less—a boost of $23 a week in installments of $7, $8 and $8. Under the Road Builders' pact, old work can be continued at former rates until July 1.

• **Five-year pacts**—In California, the carpenters settled, subject to union ratification, on a five-year basis with four southern contractor groups—AGC, Building Contractors Association, Home Builders Institute and Engineering and Grading Contractors Association. The contract, containing a reopening clause effective after two years, grants a 22½ cent hourly wage increase June 15 and 15 cents more next year, plus a 10 cent employer contribution to a pension fund.

Some 2,000 cement masons in 46 northern California counties also settled for a five-year contract on substantially the same basis with the northern California chapters of AGC. The 22½ cent boost becomes effective this week, with another 15 cents next year. Subsistence pay is upped $3 a day and a 10 cent pension contribution will start January 1. The reopener, effective after the second year, applies to basic wages and welfare payments only.

• **Other areas**—Elsewhere, among the more significant contracts concluded is one between the Home Builders Association of Philadelphia and Suburbs, and the Building and Construction Trades Council of Philadelphia and Vicinity.

Covering 12,000 construction workers in 26 homebuilding trades (but not including carpenters who have pulled out of the council), the contract runs for three years and grants a total hourly wage increase of 30 cents in three installments. Old contract had expired April 29 but the work had agreed to stay on the job another month of negotiations.

In Ohio, Toledo plumbers have w the biggest increase of all the trades— cents an hour (15 now and 10 November 1). Foremen get an ad tional 25 cent boost and area forem 50 cents. New hourly rate for journe men will be $3.55. Most of the oth trades settled for 22 cents in insta ments of 17 now and 5 in Novemb

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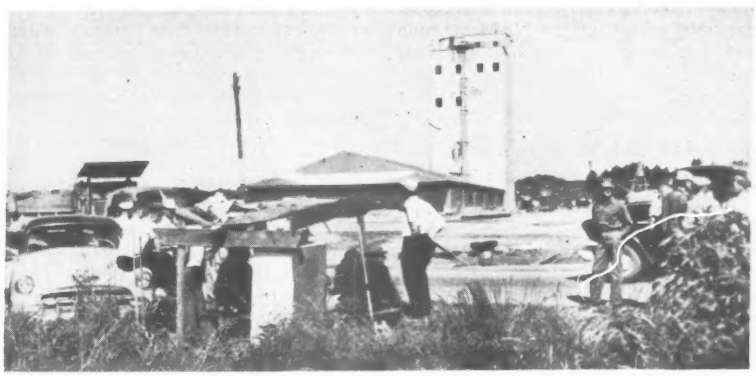

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Mitchell Would Regulate All Funds for Employees

The Administration proposal for regulation of union welfare funds has been revised by Labor Secretary James P. Mitchell to embrace all funds established for the benefit of employees, including funds unilaterally established by management as well as those that are subject to collective bargaining and are jointly administered.

Submitted to Congress last week, the new bill would make tampering with such funds or their records a criminal offense subject to a penalty of five years in prison and a $5,000 fine. The tougher attitude reflected by the proposal stems directly from welfare fund abuses disclosed by the Senate Investigating Committee.

The bill requires public accounting of employee funds and, Mr. Mitchell said, would "encourage appropriate state regulatory action and self-policing by the parties." A flurry of legislative activity to protect employee funds has already occurred at the state level in the wake of the Senate investigations.

The Mitchell proposal differs in two principal respects from one introduced earlier by Sen. Paul Douglas of Illinois. The Douglas bill calls for exemption of small funds and for administration of the law by the Securities and Exchange Commission instead of the Labor Department.

Efforts to subject employer-managed funds to government regulation has been opposed by the National Association of Manufacturers. Senator Douglas has been critical of the NAM attitude and last week told the Senate labor subcommittee it merely invites public suspicion.

Substantial Wage Gains Reported by District 50

Hourly wage increases running from 10 to 40 cents are reported for a number of Locals of the United Mine Workers' District Fifty. United Construction Workers, the principal union competitor of the AFL-CIO building trades unions, is a division of District Fifty.

The latest issue of "District Fifty News" reports seven new labor contracts with construction firms in West Virginia, Kentucky and Pennsylvania. In this group, wage boosts ranged from 10 to 25 cents an hour in one agreement and from 35 to 40 cents in another, disclosing a pattern not dissimilar from that established by the AFL-CIO trades.

Various forms of fringe benefits are featured in most of the agreements. Types reported to appear in one or more of the pacts are these:

- Time and one half for overtime, and double time for work on Sundays and holidays (usually six or seven in number).
- Two or three hours' reporting time.
- Safety provisions.
- A "liberal" vacation plan.
- An additional $2.00 a day for foremen working with tools.
- Three hours' emergency call-out pay at time and a half.
- A 10% shift differential for multiple shift operations.
- Payment of the regular rate for hours in transit when required to work away from headquarters.

Pipeline in Canada

Local labor protests use of American workers

First outspoken criticism of use of nonunion American labor on government pipeline projects in the Canadian Province of Saskatchewan has come from the Regina Trades and Labor Council, an association of all local labor unions.

The protest arose after the Saskatchewan Power Corp., a government-owned electrical and natural gas utility, granted a natural gas pipeline contract to Pacific S. and E. Pipeline, Ltd., a nonunion firm which reportedly is hiring some U. S. citizens on the job.

"The company is offering good wages, but the fact that it is nonunion and is giving jobs Canadians can do to Americans is something we should fight," said a Canadian Labor Congress official.

A spokesman for the power company pointed out that the contract was awarded to Pacific S. and E. because it offered the most favorable terms, and said a government corporation cannot open itself to the charge of dissipating public funds. "At the same time," he stated, "the corporation did not overlook its responsibilities insofar as labor was concerned. The contract contains a fair wage clause, which in general terms stipulates that the company is required to pay the going wages in the area for all classifications and will employ local skilled labor as required and available."

Under present procedure, workers cannot be hired by power company contractors until they pass qualifying tests administered by the company's consulting firm. The SPC spokesman said Canadians are being employed as they qualify and become available.

Air Force Projects Hit By Recognition Dispute

All construction work at Patrick Air Force Base and the nearby Missile Test Center at Cape Canaveral, Fla., was halted last month by a strike of Local 79 teamster members.

The strike was called against several contractors, but the principal target was B. B. McCormick Co. of Jacksonville Beach, which has a $1.9 million contract to build water supply and storage systems.

A spokesman for the Corps of Engineers issued this statement: "All work on Corps of Engineers construction projects is at a complete standstill. The shutdown is due to the fact that approximately 1,500 construction contractor employees have honored picket lines established by AFL-CIO Teamsters Local 79 which is striking a construction contractor in order to gain union recognition."

The president of the teamsters local said the teamsters union is the only one at the base that has been refused recognition. The Associated General Contractors recently gave recognition to the laborers union.

An effort is being made by the Federal Conciliation and Mediation Service to settle the dispute.

Unemployment Benefits And Right-to-Work Laws

An Arizona contractor has asked the Arizona Employment Security Commission to decide whether a union member can turn down nonunion employment and still be eligible for unemployment compensation benefits.

Present policy of the state allows payment of benefits in such a case. The contractor charges that this encourages violation of the state's right-to-work law. Under normal circumstances, a claimant cannot receive jobless benefits if he has turned down suitable employment.

The Globe contractor's objection was directed at benefit payments to a former employee, a union member who refused an offer of rehire. The contractor has declined to sign a contract with the union on the grounds it violates the right-to-work law.

A Jurisdictional Dispute Leads to Contractor Suit

A jurisdictional dispute between operating engineers and electrical workers over operation of fork lift or A-frame winch trucks is being aired in court by a chapter of the National Electrical Contractors Association.

In a suit filed against five locals of the International Union of Operating Engineers, the Los Angeles Chapter of NECA asserts that the operating engineers have protested operation of the equipment by electrical workers and have picketed or otherwise interfered with projects of NECA members in an effort to obtain the work for themselves. This, the suit contends, is not a legitimate labor objective.

The NECA chapter asks that the operating engineers be enjoined from further efforts to enforce their demands and seeks $1 million in exemplary damages.

The Hot-Cargo Clause

Carpenters held guilty of a secondary boycott

The National Labor Relations Board has again clamped down on use of hot-cargo clauses by building trades unions. And in doing so it has pointed up one of the problems that stems from the dual allegiance of a company foreman who carries a union card.

In a case that arose on a Woolworth construction job in Oneida, N. Y., the board ruled that an illegal secondary boycott occurred when carpenters, relying on union law and a hot-cargo clause in their contract, refused to install a nonunion prefabricated staircase, even though no work stoppage took place. Member Murdock, who dissented, contended the hot-cargo clause is part of a lawful contract and that union reliance on "their employer's contractual commitment to them" can't be termed a strike or concerted refusal under federal labor law.

The law forbids a union to induce its members to refuse to handle certain materials if the object is to force the employer to stop doing business, for example, with the manufacturer of the materials. A hot-cargo clause, as here, often takes the form of an employer commitment that union members on a job won't have to handle nonunion products. The courts are divided on the validity of such clauses and on the right of a union to enforce them.

In reaching its decision, the NLRB did not adopt the General Counsel's contention that the Oneida carpenters' hot-cargo clause is itself a violation of law. Instead, it concluded that the union's conduct, admittedly passive and indirect, amounted to the inducement that the law prohibits.

It was conceded that the union constitution and by-laws prohibited members from installing nonunion products and that the hot-cargo clause relieved the members from the obligation of doing so. And it was admitted that the foreman, who carried a carpenter's card, had not directed the carpenters not to handle the staircase.

The board rested its decision on what Member Murdock called "bits of conjecture and suspicion." Action which the NLRB said added up to an inducement to refuse to install the staircase was this: The foreman had told the union steward that the staircase was nonunion, he had refused to install it himself, and he had polled each carpenter with this question: "Will you handle this material?" The union business agent had told the steward that installation of the staircase was an unsettled problem. And an international union representative, by passing the buck as to what was to be done back to the foreman, had "ratified" the passive conduct of the local union officials.

Net result, said the board, was that the union business agent, the union local and the carpenters international unions were all guilty of inducing the carpenters on the job to engage in a secondary boycott.

Connecticut Legislature Tightens Welfare Funds

The Connecticut legislature has approved and sent to the governor a bill providing for strict regulation of welfare funds jointly administered by labor unions and management.

The measure requires trustees of such funds to submit annual statements to the State Insurance Commissioner and to the members, as the commissioner directs. Annual statements must be audited by a certified public accountant.

Labor Briefs...

• **Right-to-work**—A right-to-work bill introduced in the Connecticut legislature has been turned down in the General Assembly by a vote of 150 to 88, and in Louisiana an attempt to revive the right-to-work law that was repealed last year has failed. But in Idaho a freedom to work committee hopes to get a right-to-work proposal on the 1958 general election ballot.

• **Wages and prices**—Citing the April rise of the Consumer Price Index to another all-time high and the pending increase in steel prices, AFL-CIO's Walter Reuther has again requested Congressional investigation of the "price-profit-wage relationship." He puts "full responsibility" for the spreading inflation on "administered price industries."

OFFICIAL PROPOSALS

Bids: June 20, 1957.

Contract O & M-442

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
BAYONNE BRIDGE AND GOETHALS BRIDGE
PAVEMENT RESURFACING

Sealed proposals for pavement resurfacing on the Bayonne Bridge in Port Richmond, New York and Bayonne, New Jersey and the Goethals Bridge between Staten Island and New Jersey will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, until 11:00 A.M. Thursday, June 20, 1957, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, June 6, 1957

Bids: August 26, 1957.

Government of Iraq
Electrification of Basrah Power Project, Contract No. (6), Civil Engineering and Building Works

The Development Board and Ministry of Development of the Government of Iraq invite tenders from qualified firms for the Civil Engineering and Building Works for Basrah Power Station.

Full information regarding this tender can be obtained on and after May 27, 1957 from Iraquian Embassy—Washington or Messrs. Ewbank and Partners, 10/11 Grosvenor Place, London, S. W. 1. England.

All Tender Documents are to be submitted in English to the Ministry of Development, on or before 12 noon, local time on August 26, 1957.

Minister of Development.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4920) will be received at Denver, Colorado, until July 9, 1957, for furnishing one 50-ton stiffleg derrick, complete with hoisting and slewing equipment and electrical controls for Green Springs Power Plant, Rogue River Basin Project, Oregon. Delivery is desired within 300 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4923) will be received at Glendo, Wyoming, until July 2, 1957, for furnishing labor and materials for Chappell Substation, Missouri River Basin Project, Nebraska. Location Chappell, Nebraska. Principal items are 3,780 cu. yds. excavation; 65 cu. yds. concrete; furnishing and erecting 33,000 lbs. steel structures; constructing service building; and other work. Completion time 350 days. For particulars, address Bureau of Reclamation, P. O. Box 127, Glendo, Wyoming; Building 46 or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed Bids (Specifications No. DC-4924) will be received at Kanab, Utah, until July 2, 1957, for furnishing labor and materials for Laboratory, Municipal Building, and Warehouse for Page, Arizona, Glen Canyon Unit, Colorado River Storage Project, Arizona-Utah. Location near Lees Ferry, Arizona. Principal items are 16,400 cu. yds. excavation; 1,260 cu. yds. concrete; constructing field Laboratory, Municipal Building, Warehouse; and other work. Completion time 180 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City, Utah; P. O. Box 267, Kanab, Utah; or building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.10 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, P.O. Box 12, New York 36, N. Y.

Bids June 19, 1957

City of Elizabethton, Tennessee
Construction of Interceptor Sewers

LEGAL NOTICE TO BIDDERS

Sealed proposals for the construction of Interceptor Sewers will be received by the Mayor and Board of Commissioners of the City of Elizabethton, Tennessee, at the City Hall until 11:00 a.m. Eastern Standard Time on the 19th day of June 1957 and will be immediately opened and publicly read.

The work to be done consists of installing approximately 8700 feet of 24" sewer, 2750 feet of 21" sewer, 4300 feet of 18" sewer and two inverted siphons of cast iron pipe. The interceptor sewer will be let in one contract at the complete discretion of the City of Elizabethton and not necessarily to the low bidder.

It is the intention of the Mayor and Board of Commissioners to award the contract to the lowest responsible bidder.

The Mayor and Board of Commissioners reserve the right to reject any and all bids and to waive any informalities or technicalities therein.

Complete sets of the plans and specifications may be obtained from the office of:

ALLEN & HOSHALL
CONSULTING ENGINEERS
65 McCALL AVENUE
MEMPHIS, TENNESSEE

for the sum of $10.00 per set which will be non-refundable.

A copy of the plans and specifications may be examined at the office of the City Manager at the City Hall, Elizabethton, Tennessee.

Each bid must be accompanied by a certified check or Bidder's Bond in the amount of 5% of the Bid and made payable to the City of Elizabethton. The Surety Company issuing the Bidders' Bond shall be licensed to do business in the State of Tennessee.

The successful Bidder will be required to execute a Performance Bond in the amount of 100% of the contract, which shall be made through a local agent.

All Bidders shall be licensed contractors as required by Section 135 of the Public Acts of 1945 of the General Assembly of Tennessee.

No Bidder may withdraw a bid for a period of thirty (30) days after the date set for opening of bids.

THE CITY OF ELIZABETHTON,
TENNESSEE.
By William G. Frost
Mayor

Bids: July 15, 1957.

Power Authority of the State of New York
Niagara Power Project

ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF 200,000 HP HYDRAULIC TURBINES FOR LEWISTON POWER PLANT
SPECIFICATIONS NO. PA-N-24002
NIAGARA CONTRACT NO. NP 3

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the design, manufacture, and furnishing of 200,000 HP hydraulic turbines and delivery thereof f.o.b. Model City, New York, until 10:30 A. M. Eastern Daylight Saving Time on the 15th day of July at the Authority's office, 18th Floor, The Coliseum, 10 Columbus Circle, New York 19, New York at which time and place proposals will be publicly opened and read aloud.

Bids will be entertained for 6, 7 or 13 turbines and associated equipment and services in accordance with the bidding schedules.

Bids will not be restricted to American manufacturers.

Plans, Specifications and Proposal Forms for the work, may be obtained from the Power Authority of the State of New York, at 270 Broadway, Room 1300 until May 29, 1957 and after June 1, 1957 at The Coliseum, 18th Floor, 10 Columbus Circle, New York 19, New York upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents, and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall and Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made in duplicate in accordance with instructions contained in the information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the maximum price bid for any bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
PA-N-24002 GENERAL MANAGER

Bids: June 19, 1957.

City of Elizabethton, Tennessee
Construction of a Municipal Sewage Treatment Plant

LEGAL NOTICE TO BIDDERS

Sealed Proposals for the construction of a municipal Sewage Treatment Plant will be received by the Mayor and Board of Commissioners of the City of Elizabethton, Tennessee, at the City Hall until 11:00 a.m. Eastern Standard Time on the 19th day of June 1957 and will be immediately opened and publicly read.

The work consists of the construction of a 2.0 MGD Primary Sewage Treatment Plant with sludge dewatering equipment and includes a primary pumping station.

It is the intention of the Mayor and Board of Commissioners to award the contract to the lowest responsible Bidder.

The Mayor and Board of Commissioners reserves the right to reject any or all bids and to waive any informalities or technicalities therein.

Complete sets of the plans and specifications may be obtained from the office of:

ALLEN & HOSHALL
CONSULTING ENGINEERS
65 McCall Avenue
Memphis, Tennessee

for the sum of $15.00 per set which will be non-refundable.

A copy of the plans and specifications may be examined at the office of the City Manager at the City Hall, Elizabethton, Tennessee.

Each bid must be accompanied by a Certified Check or Bidder's Bond in the amount of 5% of the Bid and made payable to the City of Elizabethton. The Surety Company issuing the Bidder's Bond shall be licensed to do business in the State of Tennessee.

The successful Bidder will be required to execute a Performance Bond in the amount of 100% of the Contract, which shall be made through a local agent.

All Bidders shall be licensed contractors as required by Section 135 of the Public Acts of 1945 of the General Assembly of Tennessee.

No Bidder may withdraw a bid for a period of thirty (30) days after the date set for opening of bids.

THE CITY OF ELIZABETHTON,
TENNESSEE
By William C. Frost
Mayor

Bids: June 25, 1957.

Contract PN-450.001

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
IMPORT STREET LUMBER STORAGE AREA
PAVING AND DRAINAGE

Sealed proposals for paving and furnishing and installing drainage for a lumber storage area on Import Street at Port Newark, New Jersey, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, June 25, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, June 6, 1957

Bids: June 20, 1957.

Contract O & M-441

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
LA GUARDIA AIRPORT
PAVEMENT REPAIRS AND SEAL COATING

Sealed proposals for furnishing all labor, material and equipment for the performance of paving repairs and seal coating of taxiways and aprons at La Guardia Airport will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, N. Y., until 11:00 A.M. Thursday, June 20, 1957, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, June 6, 1957

U. S. Government

BRIDGE CONSTRUCTION—U. S. Army Engineer District, Memphis, Corps of Engineers, P. O. Box 97, Memphis 1, Tenn. Sealed bids will be received at this office until 1:30 P.M. C.S.T., 11 June 1957, and then publicly opened, for constructing four county bridges across St. Francis River in St. Francis and Lee Counties, Arkansas. $25.00 deposit required on plans. Information on request.

OFFICIAL PROPOSALS

Bids: June 27, 1957.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 27th day of June 1957, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.						
Oneida	FASS 57-7	Champlin Road, Co. Rd. Project S-504 (1)	1.17	Asp. Conc., Ty. 1A = 1.16 Mi. Misc. Work = 0.01 Mi.	$29,000 Plans $10	$534,000
DISTRICT No. 3, Wm. Robinson, District Engineer, Weigh Lock Building, Syracuse, N. Y.						
Onondaga (Rte. 11)	FARC 57-91	Syracuse-Cicero, S.H. 5470 Project F-463(16)	1.06	Asphalt Concrete	$5,000 Plans $10	93,000
Oswego	FATC 57-5	City of Fulton: East-West Arterial Highway, FAC 56-7 Project U-624(4)	0.99	Traffic Signal System	$2,000 Plans $10	29,000
Tompkins (Rte. 13 & 34)	FARC 57-89	Ithaca-Newfield, S.H. 5214 Ithaca-West Danby, Pt. 1, S.H. 5379 and Ithaca, S.H. 454 Project F-506(7); F-560(4)	4.47	9" Cem. Conc. Pavt. 24'-40' Wide = 0.78 Mi. Asp. Conc = 3.61 Mi. Misc. Work = 0.08 Mi.	$27,000 Plans $15	486,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Genesee (Rte. 5)	FARC 57-79	Leroy-Caledonia, S.H. 5463 Project F-335(3)	0.12	Asp. Conc., Opt. = 0.08 Mi. Misc. Work = 0.04 Mi. R. C. Slab Br. 24'	$3,000 Plans $10	57,000
Livingston (Rte. 256)	FARC 57-98	Dansville-Conesus, Pts. 2 & 3, S.H. 1702 Project F-579(6)	0.74	Asphalt Concrete	$3,500 Plans $10	63,000
Livingston (Rte. 258)	FARC 57-78	Tuscarora-Groveland, Pt. 1, S.H. 1732 Project S-333(1)	0.15	Asp. Conc. = 0.13 Mi. Misc. Work = 0.02 Mi. Prestressed Conc. Unit Br. 94'	$11,000 Plans $10	200,000
Monroe	LOSP 57-1P	Lake Ontario State Parkway Sect. "D"	3.04 (1.16 Acc.)	Asphalt Concrete Hy. Sep. Rigid Frame 106.7'	$73,000 Plans $25	1,330,000
Monroe	FATC 57-4	City of Rochester: Inner Loop (South Ave. to George St.), FAC 56-3 Project U-231(10)	0.32	Traffic Signal System	$3,000 Plans $10	47,000
Monroe (Rte. 252)	FARC 57-87	Ballantyne Bridge-Pittsford, Pt. 1, S.H. 8443 Project F-600(6)	2.27	Asphalt Concrete	$11,000 Plans $10	202,000
Monroe (Rte. 47)	FARC 57-97 R.C. 57-99	Howard Road, S. H. 9350 Rapids-Rochester, S.H. 401 Project S-511(1)	2.82	Asph. Conc. = 2.75 Mi. Asph. Conc., Ty. 2B = 0.02 Mi. Misc Work = 0.05 Mi. Remove & Replace Wearing Course on Exist. Br.	$15,000 Plans $10	266,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, 65 Court St., Buffalo, N. Y.						
Erie (Rte. 5)	T.C. 57-3	Main Street, S.H. 69	2.80	Traffic Signal System	$6,000 Plans $10	102,000
Erie & Niagara	T.C. 57-2	City of Tonawanda: Seymour St., FAC 56-2 City of Tonawanda: Seymour St.-Barge Canal, FAC 55-12 City of North Tonawanda: Barge Canal-River Road, FAC 55-13	0.99	Traffic Signal System	$4,000 Plans $10	70,000
Niagara (Rte. 18 & 62)	FARC 57-86 R.C. 57-90	Niagara Falls-Buffalo, Pt. 2, S.H. 5164 Niagara Falls-Buffalo, Pt. 3, S.H. 5220 Project F-500(7)	5.43 (0.12 Int.)	Asphalt Concrete	$30,000 Plans $10	585,000
Erie & Niagara (Rte. 18)	FARC 57-96	Niagara Falls-Buffalo, Pt. 4, S.H. 5172-5172A Niagara Falls-Buffalo, Pt. 3, S.H. 5220 Project F-500(8)	2.33	Asphalt Concrete	$15,000 Plans $10	265,000
DISTRICT No. 6, J. H. Thomas, District Engineer, 30 West Main St., Hornell, N. Y.						
Steuben (Rte. 36)	FARC 57-61	Hornell-Arkport, S.H. 5254 Project F-619(4)	2.71	Asphalt Concrete	$12,000 Plans $10	214,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
Clinton (Rte. 190)	FARC 57-88	The Forge-Ellenburg, Pt. 3, S.H. 8480 Project F-853(2)	3.33	Asphalt Concrete Alterations to Exist. 62' Plate Girder	$32,000 Plans $15	582,000
Franklin (Rte. 3)	FASH 57-13	Saranac Lake Village Project U-623(7)	1.04 (0.04 Int.)	Asphalt Concrete Pre-stress Conc. Beam Br. 186' Pre-stress Conc. Ped. Overpass 120'.	$45,000 Plans $25	830,000
Lewis (Rte. 12D & 26)	FARC 57-77	Oneida County Line-Turin, S.H. 5327 Constableville-Lyons Falls, Pt. 1, S.H. 1600 Project F-330(6), F-415(11)	0.70	Asp. Conc., Ty. 1A = 0.65 Mi. Misc. Work = 0.05 Mi. 2 R.C. Box Brs. 35.6' and 31.5'	$12,000 Plans $15	220,000
Jefferson (Rtes. 12 & 179)	FARC 57-94	Watertown-Cyayton, Pt. 3, S.H. 5266 Project F-745(4)	2.35	Asphalt Concrete	$4,000 Plans $10	72,000
Jefferson (Rte. 3)	FARC 57-95	Oswego County Line-Aspinwall Corners, Pt. 1, S.H. 8418 Project F-539(9)	4.15	Asphalt Concrete, Ty. 1A	$7,000 Plans $10	127,000
St. Lawrence (Rte. 420)	FARC 57-92	Massena-Winthrop, Pt. 1, S.H. 5641 Project F-112(5)	0.71	Asphalt Concrete, Ty. 1A	$1,500 Plans $10	28,000
DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Columbia (Rte. 66)	R.C. 57-84	Chatham-Chatham Center, Pts. 1 & 3, S.H. 1563 Chatham-Chatham Center, Pt. 2, S.H. 342 Chatham Center-Riders Mills, S.H. 827	3.88	Roadside Development	$250 Plans $10	4,000
Orange (Rte. 42)	R.C. 57-85	Port Jervis-Sullivan County Line, Pt. 1, S.H. 412	1.60	Roadside Development	$650 Plans $10	12,000
DISTRICT No. 9, J. C. Frederick, District Engineer, 71 Frederick St., Binghamton, N. Y.						
Delaware (Rte. 28 & 30)	FARC 57-80 R.C. 57-81	Andes-Margaretville, S.H. 8017 Margaretville-Halcottsville, S.H. 5384 Project S-459(1)	0.48	9" Cem. Conc. Pavt. 22'-40' Wide = 0.36 Mi. Asp. Conc., Opt = 0.09 Mi. Misc. Work = 0.03 Mi.	$10,000 Plans $10	190,000
Schoharie (Rte. 20)	FARC 57-93	Sharon-Sloansville, S.H. 8081 (Westbound Lane) Project F-33(3)	7.34	Asphalt Concrete	$24,000 Plans $10	445,000
DISTRICT No. 10, M. E. Goul, District Engineer, Little East Neck Rd., Babylon, L. I., N. Y.						
Bronx	FIBE 57-2	Bruckner Expressway, Sect. I, Cont. 4C and 4D Project I-1086(5)	1.99	Demolition of Buildings	$14,000 Plans $10	252,000
Nassau (Rte. 106)	R.C. 57-83	Jericho-Oyster Bay, S.H. 9021	1.35	Asphalt Concrete	$4,000 Plans $10	72,000
Nassau (Rte. 107)	R.C. 57-82	Massapequa-Glen Cove, S.H. 9017	3.22	Asp. Conc. = 3.15 Mi. Misc. Work = 0.07 Mi.	$9,000 Plans $10	163,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: June 20, 1957

Power Authority of the State of New York
Supplemental Transmission Work

ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF STRUCTURAL STEEL FOR ADIRONDACK SUBSTATION
SPECIFICATIONS NO. PA-8-3
CONTRACT NO. TP 9

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the shop detailing, fabrication and furnishing of structural steel for the Adirondack Substation and the transmission line towers adjacent to the Adirondack Substation and delivery thereof f.o.b. destinations, until 10:30 A.M., Eastern Daylight Saving Time, on the 20th day of June, 1957, at the Authority's office, 18th floor, The Coliseum, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

Bids will be received for the structural steel for the Adirondack Substation and the transmission line towers adjacent to the Adirondack Substation in accordance with the bidding schedules. Estimated quantity for substation 80 tons; for transmission line towers 40 tons. Erection at the site of installation will be done by Others. Delivery will be required starting September 15, 1957.

Plans, Specifications and Proposal Form may be obtained only from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, until the 29th day of May, 1957, and thereafter at The Coliseum, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) for initial set of Contract Documents and Five Dollars ($5.00) for each additional set, no part of which will be refunded. Two sets must be returned with each bid.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the office of the Engineer, Uhl, Hall and Rich, 230 Congress Street, Boston 10, Massachusetts, for the inspection by prospective bidders.

Bids will not be restricted to American manufacturers.

Bids must be made in duplicate in accordance with the instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than ten per cent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
PA-8-3 GENERAL MANAGER

Bids: June 13, 1957.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, sealed proposals will be receiver until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 13th day of June, 1957, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following project in Essex County:

G. L. Nickerson,
District Engineer,
353 Broadway,
Albany, N. Y.

County	Contract No.	Name
Essex	CH. 310 Laws 1957(2)	Little Whiteface Ski Center (Development of Ski Trails)

Miles	Type	Deposit	Estimated Cost of Work
7.41	Clearing, Grubbing, Grading, Seeding and Drainage	$11,000 Plans $10	$205,000

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: June 25, 1957.

Contract PN-430.001

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
TYLER STREET
PAVING AND UTILITIES

Sealed proposals for paving and the furnishing and installation of utilities for Tyler Street at Port Newark, New Jersey, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, until 2:30 P.M. on Tuesday, June 25, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, June 6, 1957

Bids: June 19, 1957.

Approaches, Substructures, and Miscellaneous Construction

Approaches, Substructure, and Miscellaneous Construction for Double Deck Vertical Lift Bridge carrying highways M26 and US-41 (Relocated); The Copper Range Railroad, and Duluth South Shore and Atlantic Railroad over Portage Lake between Houghton and Hancock in Houghton County.

Project; U B1 of 31-10-1, C5 U (U 175) (22) 31051

Net Classification required for this project is 306 FA, Sub E, Sub. B, Sub. CC, Sub. P, Electrical, Sub. Railway signal work, Sub. Tower Manlifts, Sub. Preplaced.

Aggregate Concrete (if elected).

Sealed Proposals for the construction of this project will be received from contractors having 1957 Michigan State Highway Department prequalifications, in the small auditorium civic center, Lansing, Michigan, until 10:30 A.M. Eastern Standard Time on Wednesday, June 19, 1957, and will then and there be publicly opened and read. Proposals may be mailed to the Contract-Estimate Office, 715 Stevens T. Mason Bldg., Lansing, Michigan.

The work will consist on construction of Approaches, Substructure, Electrical, Railway Signals, etc.

Prequalification reporting forms may be obtained on application to Contract-Estimate Engineer's Office. They must be received at least 10 days before opening of bids. Completion date for entire project December 15, 1959.

The Department's Standard Specifications 1950 Edition, its current Soils Manual, the plans for this project, the special provisions governing subletting and assigning the contract and the employment and use of labor, and the proposal blank (all of which are essential parts of the contract) may be examined at the District Office of The Department at Crystal Falls, and Lansing. Escanaba, and at the Michigan Road Builders Association, Lansing, Michigan, but may be obtained only at the office of the Contract-Estimate Engineer, 715 Stevens T. Mason Bldg., Lansing, Michigan, up to 5:00 P.M. of the day preceding the opening of bids. A fee of three dollars will be charged for furnishing plans or proposals blanks, which will not be refunded.

Full cooperation in carrying out the special provisions will be required. Minimum wage paid to labor employed on this contract shall be as outlined in the proposal.

A certified or cashier's check, bank money order, or certificate of deposit, properly endorsed, on an open, solvent bank, in the sum of $153,000.00 payable to Charles M. Ziegler, State Highway Commissioner, must accompany each proposal. All such checks will be returned promptly after the bidding, except that of the lowest bidder will not be returned until execution and delivery of the contract to the State Highway Department.

The right is reserved to reject any or all proposals.

Charles M. Ziegler,
State Highway Commissioner.

Bids: July 2, 1957.

Contract 446
Unwatering and Cleaning the Rondout-West Branch Tunnel of the Delaware Aqueduct

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Daylight Saving Time (10:00 A.M. Eastern Standard Time), on Tuesday, July 2, 1957, for Contract 446, for unwatering and cleaning the Rondout-West Branch tunnel of the Delaware aqueduct and for performing the work incidental to these operations. The work of this contract includes unwatering the tunnel and maintaining it in an unwatered condition until it has been cleaned and a final inspection made; moving pumps and other unwatering equipment owned by the City of New York from places of present storage, installation and use of such equipment and its subsequent removal and return to storage; furnishing, installation, operation and subsequent removal of a head frame, hoist, hoist house and appurtenant equipment; and furnishing, installation, use and removal of plant and equipment required for the cleaning of the tunnel, all as set forth in the specifications.

Pamphlets of the contract containing information for bidders, forms of bid and contract, specifications, contract drawing, requirements as to surety, etc., can be obtained in the Secretary's office, Room 1312 at the above address, upon application in person or by mail, by depositing the sum of $5.00 for each pamphlet. Within 30 days following the award of contract or rejection of bids the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; BETTY COHEN, Acting Secretary.

Bids: June 20, 1957.

Contract O & M 434

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
HOLLAND TUNNEL
BRICKING UP WINDOWS—NEW JERSEY & NEW YORK
RIVER VENTILATION BUILDINGS
PROPOSAL NO. 1065

Sealed proposals for bricking up windows—New Jersey & New York river ventilation buildings—Holland Tunnel will be received at the office of the Department of Purchase and Administrative Services of the Port of New York Authority, Room 900, 111 8th Avenue, New York 11, until 11:00 A.M., Thursday, June 20, 1957, at which time and place said proposals will be opened and read.

Contract documents may be had upon request at the office of the Department of Purchase and Administrative Services, Room 900, 111 8th Avenue, New York 11, N. Y.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, June 6, 1957

EMPLOYMENT OPPORTUNITIES

DISPLAYED

The advertising rate is $31.80 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

—RATES—

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.
Position Wanted ads take ½ of above rate.
Box Numbers—count as 1 line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.
Not subject to Agency Commission.

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P. O. Box 12, N. Y. 36. June 20th issue closes June 10th

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City Engineer: Registered professional engineer desired for City of approximately 18,000. Municipal experience desired, but not mandatory. Full details of education, experience and qualifications should be furnished. Contact Mayor, Fremont, Nebraska.

Engineers on water works, sewerage and sewage treatment projects. Experienced in design and plan preparation for sanitary projects or work of related type. Opportunity for permanent connection with Ohio consulting firm in long established practice. Please provide full details of experience, education, references and salary. P-5047, Engineering News-Record.

Engineering Graduates with experience in the testing and control of concrete, asphalt and soils for work abroad. Give full details of experience and education. Salary range $8000.00 to $10,000.00 per year. P-5104, Engineering News-Record.

Wanted—Aggressive manager for growing 25 man structural fabricating shop, midwest location. Write stating qualifications and compensation desired. P-5093, Engineering News-Record.

Experienced Steel Detail Checker. Must have minimum of 3 years detailing experience. Assistant to Chief Engineer. Will supervise and check work of detailers, handle job correspondence and scheduling. Will be trained to do steel estimating. Good salary, usual vacation and benefits plus profit sharing plan. Send resume and references to—Michigan Fabricating and Welding, 1950 Wellworth St., Jackson, Michigah.

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Structural Steel Detailer. Must be experienced in both structural and miscellaneous steel detailing. Good working conditions in new office building with company of 70 years standing. Excellent climate, good living conditions. Give full particulars. Write or phone Tucson Iron Works, Box 1949, Tuscon, Arizona.

Civil Engineer—Design—The Philadelphia International Airport needs an engineer who desires to obtain broad experience in all branches of civil engineering. This position offers unique possibilities for using initiative and imagination in solving design problems for one of the nation's newest, most modern airports. Opportunity for promotion is extensive and based on demonstrated merit. Requires CE degree and two years experience. Starting salary $6054 per year. Send detailed resume to Mr. D. C. Montgomery, Division of Aviation, Phila. International Airport, Philadelphia 42, Penna.

Superintendent For Concrete Bridge Foundations and Decks. Man with carpenter background preferred. Write Merritt-Chapman & Scott Corp., 10 Village Street, East Hartford, Conn.

POSITIONS VACANT

Project Engineer to Head Up Inspection & Testing Group (Soils, Concrete & Asphalt) on construction of Overseas Airbase. Temperate Climate. P-5208, Engineering News-Record.

Young engineer needed for field and office work with established sail foundation firm covering the Mid-Atlantic States. Work will be out of Washington, D. C. office. Write to Spencer, White, & Prentis, Inc., Rm 236, Tower Bldg., Washington, D. C. or call Harry Schnabel, St. 3-0580.

Inspectors—Concrete, Soils & Asphalt, Lab & Field. For Overseas Airbase Construction. Temperate Climate. Please send detailed resume. P-5257, Engineering News-Record.

Superintendent. Excavation & Sewer. Must be fully qualified to handle industrial excavation and municipal sewer work. Cerco Construction Company, Inc., P.O. Box 41035, 3421 West Kelly St., Indianapolis 41, Ind.

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Mechanical Engineer — Age 31 — contracts manager, project engineer—supervisor machinery and mechanical equipment installation. 8 years experience heavy construction foreign and domestic, field and office. Excellent references. Seeking opportunity N.Y.C. or vicinity metropolitan area. PW-4764, Engineering News-Record.

Chief Estimator, B.C.E., 10 yrs. heavy construction experience, excavation, utilities, paving, structures. Prepare bids, payments, subs, costs, admin. P.E. license N.Y. & N.J. Prefer N.Y., N.J. or Conn. PW-5095, Engineering News-Record.

C.E., 26, Associate, learn with small, local contractor. Field, office. Anywhere. PW-5084, Engineering News-Record.

Civil Engineer—Good all-round man, broad experience. South or West. PW-5113, Engineering News-Record.

Project Manager—20 years experience, power plants and heavy industrial work both foreign and domestic. PW-5122, Engineering News-Record.

Architectural Engineer, graduate, 10 years exp. in various construction capacities, presently heading own Contracting firm. Background Greek education desires position (Eng. Administrative or sales) in Greece only. PW-5225, Engineering News-Record.

Construction Superintendent or Project Manager thoroughly experienced on all types of projects. Will go anywhere, foreign or domestic. Available immediately. Best of references. PW-5180, Engineering News-Record.

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Professional Engineer—Land Surveying office desires Highway, Bridge, subcontract work. PW-5267, Engineering News-Record.

Graduate civil engineer—age 40—registered. 20 yrs. experience—11 yrs. with consulting firm on all types of civil engineering projects. Engineering management position desired with large concern in South. PW-5251, Engineering News-Record.

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Graduate Structural Engineer, twenty-five years experience in design and supervision of buildings and highways bridges, would desire position of a supervisory nature in the Boston area. PW-5254, Engineering News-Record.

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Civil and Structural Engineer, M.S., 32, Danish, Fluent English, experienced in Prestressed Concrete, wished to emigrate and work in U.S. PW-5283, Engineering News-Record.

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P-5278, Engineering News-Record,
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P-5269, Engineering News-Record,
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P-5276, Engineering News-Record,
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P-4635, Engineering News-Record,
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P-3222, Engineering News-Record
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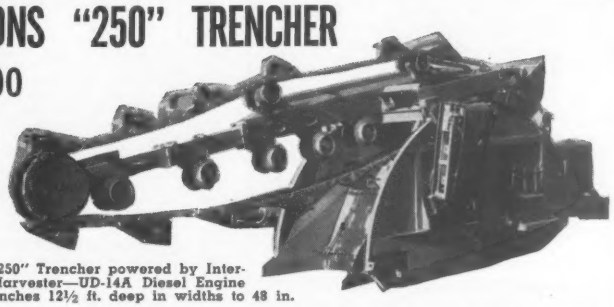

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Bethlehem Steel Co. 161
Blaw Knox, Const. Equip. Div. 112, 113
Borden Metal Prod. 22
Broderick & Bascom Rope Co ..... 4th Cover
Bros, Inc. 129
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Contractors Service Ltd. 163
Crane Carrier Corp. 11

Deming Co., The 86
Detroit Diesel Engine Div., General Motors Corp. 98, 99
Eugene Dietzgen Co. 102
Dravo Corp. 59, 153
Dresser Mfg. Div., Dresser, Ind. 73

Eastern Constructors Inc. 160
Economy Forms Corp. 128
Electrovert Ltd. 91
Electro Data Corp. 16
Euclid Div., G. M. C. 119, 126, 127

Fairbanks-Morse Co. 3, 153
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Foster Co., L. B. 20

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Harnischfeger Corp. 6, 7
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Hetherington & Berner, Inc. 104, 105
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Ingersoll Rand Co. 17
Inland Steel Prod. Co. 45
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Irvington Form & Tank Corp. 10

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Jones & Laughlin Steel Corp. 131

Kinnear Mfg. Co. 115
Koehring Co., The 168, 169
K. S. M. Prod., Inc. 144

Laclede Steel Co. 145
Lehigh Portland Cement Co. 132
LeTourneau-Westinghouse Co. 50-55
Levinson Steel Co. 97
Link Belt Speeder Corp. 175
Lock Joint Pipe Co. 18

Macomber, Inc. 137
Madesco Tackle Block Co. 101
Mall Tool Co., Div. of Remington Arms Co. Inc. 81
Manitowoc Engineering Works 158, 159
Marion Power Shovel Co. 95
Maxon Construction Co. 155
McKiernan-Terry Corp. 128
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W. R. Meadows, Inc. 110
Merriman Bros., Inc. 38
Miller Electric Mfg. Co. 154

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Oliver Corp. 85
D. W. Onan & Sons, Inc. 146

Patent Scaffolding Co. 117

RBP Engineering 195
Raymond Concrete Pile Co. 88, 89
Reda Pump 166
Republic Steel Corp. 40, 41
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Rockford Clutch Div., Borg Warner 143
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Vascaloy-Ramet Corp. 116

Westinghouse Electric Corp. 134, 135

Professional Services 191-194

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F. J. Eberle, Business Mgr.

Employment Opportunities 185-187
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Notices
Proposal 182-184
Equipment
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False Doctrine

EXERCISING ITS PREROGATIVE AND DUTY to discuss important questions of the day, the NEW YORK TIMES recently voiced in an editorial an opinion on the timing of public works, which must be challenged as false doctrine. The statement occurred in an otherwise thoughtful and informative editorial concerned with the federal budget, which was entitled "How and Where to Cut." It may not have been meant to imply all that it does, but the statement could be misunderstood nevertheless.

Speaking of budget cuts, the editorial states, "There can be no doubt that Congress could make a dent in domestic spending without harming essential programs if it were willing to pass the requisite legislation or if it were willing not to pass some legislation that it seems bent on passing. In this last category we would point particularly to public works projects—rivers and harbors, roads, dams—that would be much better suited to a depression period than to the present era."

Now the theory that public works, in a nation bent on growth and higher living standards, can be postponed until there is a depression is dangerous in the extreme. Public works are not, and should never be considered as, job-making devices in the narrow sense of just making work for someone in their design and construction. They should be regarded as capital facilities in the same way that a new factory is a capital facility. If they are needed, they must be built when they are needed.

Obviously, there are specific public works projects of questionable necessity—and there may well be some such in the federal programs represented in the budget. But merely to generalize about public works and say that they are "better suited to a depression period" is false doctrine. Slowed down national growth would be the price of following it.

The English Channel Tunnel

ONLY A LONG SHOT GAMBLER would bet that anything will come of the recently announced interest of the Suez Canal Company in the 150-year-old scheme to drive a railway tunnel from the Cliffs of Dover to the vicinity of Calais, France. Too many promoters have already come a cropper in attempts to rally financial support for this elusive engineering dream for this latest pitch for attention to be given any more chance of success than earlier ones.

Nevertheless, the revival of interest in the project is not without its good points. There is always the faint possibility that enough financial support will be enlisted to permit further exploration of some of the difficult engineering problems with which the project abounds. And even if nothing so tangible as this happens, the new interest aroused will keep this intriguing project alive in the minds of the present engineering generation.

The profession needs a certain number of fantastic, or at least improbable, projects on its roster to whet its imagination, to stimulate it to think in broad terms and just to entice it to argument. The Yangtze Gorge Dam in China was one of these. So are mile-high skyscrapers, mile-long bridge spans and large-scale desalting plants for sea water, to name a few.

The English Channel tunnel is one of the best of these dream projects. First proposed by a French engineer about 1800 and next actually promoted by Napoleon III of France in 1867, it would have to be at least 24 miles long. It would have to be so deep under water that compressed air driving could not be used to keep the water out should this be necessary. If driving should encounter permeable material, solidification would have to be attempted by pushing such processes as freezing, high pressure grouting or chemical injection into untried dimensions. And before any start on the job can be contemplated, there is the need to establish the top profile of the chalk formation under the Channel and detect any sediment-filled valleys, even to identify the sediment. As good as modern echo-sounding equipment is, this latter requirement is a difficult one.

Given a continuous, impermeable chalk formation, tunnel driving could no doubt be carried out with considerable speed using some of the new rotary drilling machines introduced in recent years. Moreover, the chalk could readily be fluidized, so that the excavated material could be disposed of through pipelines.

Nor are designs for the tunnel lacking. The Channel Tunnel Company, Ltd., formed in 1875, is still in existence, and there is a Channel Tunnel Committee in the British Parliament, as well as interested French organizations. Out of their efforts there has emerged a plan for two 18½ ft bores with a 12 ft pilot tunnel between and a 7 ft drainage tunnel at a lower level. Experimental shafts have been sunk in the Dover Cliffs, and a 2 mile heading was at one time driven from one of these shafts extending for a short distance under the Channel.

There is, therefore, a modicum of information available upon which engineers can exercise their imaginations. Moreover the challenge of a Channel crossing has produced many other schemes for the archives—a bridge, a submerged floating tube, and a continuous fill among others.

The Suez Canal Company, in reviving interest in the problem, has done the engineering profession a good turn. It may not be able to get up the necessary $300 million, the presently estimated cost to build the tunnels, or it may not be willing to gamble the $1 million necessary for a thorough geological survey, but it has given engineers everywhere a worthwhile topic of conversation. If not the Channel tunnel, something else of value may emerge from all of the talk.

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American PIPE AND CONSTRUCTION CO.

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District sales offices and plants:
Hayward and San Diego, Calif., Portland, Ore., Phoenix, Ariz.

District sales representatives:
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"Yellow Strand Wire Rope is our choice... has been for 10 years..."

says Mariani Construction Co., Inc.
New Haven, Conn.

Yellow Strand

... always on hand

No matter where your job is located, there's a Yellow Strand distributor nearby. He has "stocks on hand." In addition, B & B warehouses are located conveniently throughout the country.

Here's one of Mariani Const. Co.'s cranes setting stone on bridge construction. It's on a section of the Connecticut Turnpike in New Haven. All of Mariani's shovels and cranes are equipped with Yellow Strand Wire Rope. Alfred Comera, supt. of equipment, says, "We've used Yellow Strand for 10 years. It has proven itself satisfactory throughout the years."

Yellow Strand Flattened Strand and "Powersteel" Wire Ropes are "standard choice" of many contractors. They're available in a wide range of sizes. They're tough, strong and wear resistant. They have an in-built quality from more than 80 years of manufacturing wire ropes exclusively. Why not check with your B & B distributor — he can assist you and save you wire rope money.

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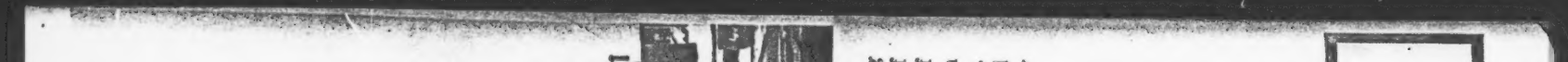
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